

# Suid-Afrikaanse Tydskrif vir Geneeskunde South African Medical Journal

Posbus 643, Kaapstad

P.O. Box 643, Cape Town

Kaapstad, 29 Junie 1957  
Weekliks 2s. 6d.

Vol. 31 No. 26

Cape Town, 29 June 1957  
Weekly 2s. 6d.

## PERNICIOUS ANAEMIA IN AN AFRICAN

E. B. ADAMS, M.R.C.P.

*Professor of Medicine, University of Natal, Durban*

It would be surprising if pernicious anaemia did not occur among Africans in South Africa for it is not uncommon in Negroes in the United States<sup>1,2</sup> and it is found in the tropics and subtropics.<sup>3</sup> Occasional cases have been reported elsewhere in Africa.<sup>4,5</sup> We have seen an African woman in Durban with megaloblastic anaemia indistinguishable from pernicious anaemia on clinical grounds,<sup>6</sup> while Woods and Rymer<sup>7</sup> described a case in Pietermaritzburg with megaloblastic anaemia, histamine-fast achlorhydria, a characteristic gastric mucosa and subacute combined degeneration of the cord. Among Africans and Indians in South Africa, however, other varieties of megaloblastic anaemia appear to be much commoner, and in some of these patients there is no free acid in the gastric juice. In this paper, which records a further case of pernicious anaemia in a Zulu male confirmed by gastric biopsy and estimation of the level of vitamin B12 in the serum, the problem of diagnosis and treatment of megaloblastic anaemias in Africans and Indians with histamine-fast achlorhydria is discussed.

### CASE REPORT

Admitted on 21 September 1956, this patient gave a 5-day history of cough, shortness of breath and right upper abdominal pain. For the past 2 years he had complained of lassitude and anorexia. He gave his age as 40 years and said that he came from pure Zulu stock. He was in steady employment as a domestic servant, and his diet was adequate. There was nothing relevant in the past history.

On examination the temperature was normal, the pulse rate 104 per minute and the blood pressure 100/55 mm. Hg. Although the patient weighed only 105 lb., he was a small man showing no signs of malnutrition. There was obvious anaemia, slight icterus and a pale smooth tongue. The liver and spleen were not palpable, the central nervous system was normal, and so were the rest of the organs on examination. His haemoglobin (Hb) was 4.1 g. % on admission, red cells 1,290,000 per c.mm., mean corpuscular haemoglobin concentration (m.c.h.c.) 33%, mean corpuscular volume (m.c.v.) 97 c.μ., white cells 3,500 per c.mm., reticulocytes

3.7%. The blood film showed anisocytosis, poikilocytosis, polychromasia and macrocytosis; occasional immature leucocytes were observed. The bone marrow was megaloblastic and there was histamine-fast achlorhydria. Before treatment the serum vitamin-B12 level was 46 μg. per ml. (assayed by the method of Hunter *et al.*). The gastric mucosa appeared atrophic and shiny on gastroscopy, and a biopsy specimen obtained by using a Wood's flexible biopsy tube showed severe atrophic gastritis. The serum bilirubin was 1.4 mg. %, zinc turbidity 9 units, alkaline phosphatase 6 K.A. units, cephalin cholesterol flocculation test positive; total serum-proteins were 7.1 g. % and albumin 2.7 g. % by fractionation; electrophoresis gave the following values: albumin 3.4 g. %, α<sub>1</sub> globulin 0.4 g. %, α<sub>2</sub> globulin 0.6 g. %, β globulin 0.7 g. %, λ globulin 2.0 g. %. Examination of the urine, X-ray of the chest and electrocardiography showed no abnormality.

There was a slight fluctuation in the daily reticulocyte counts over a 5-day observation period but no change in Hb or packed cell volume. Thereafter 100 μg. of vitamin B12 was given by intramuscular injection, followed by 50 μg. twice weekly. Reticulocytes reached a peak of 40.7% on the 6th day of treatment, and there was a steady rise in the blood count with corresponding clinical improvement. On the 22nd day the serum vitamin-B12 level was 632 μg. per ml. When the patient left hospital 10 days later he felt well and there were no abnormal physical signs. Hb was 10.8 g. %, red cells 3,840,000 per c.mm., m.c.h.c. 31%, m.c.v. 91 c.μ., white cells, 4,200 per c.mm. Subsequently he has received 50 μg. of vitamin B12 every 3 weeks. Six months after discharge he had no complaints, examination revealed no abnormality, and his Hb was 14.2 g. %, red cells 4,760,000 per c.mm., m.c.h.c. 32%, m.c.v. 95 c.μ., leucocytes 4,400 per c.mm. His serum bilirubin was 0.3 mg. % on discharge while his liver function tests, including the electrophoretic pattern of serum proteins, were similar to those on admission, with slight rises in zinc turbidity and alkaline phosphatase, a trend in the latter observed again after 6 months.

### DISCUSSION

Mollin and Ross<sup>8</sup> showed that the serum vitamin-B 12 levels in 190 patients with pernicious anaemia in relapse were less than 100 μg. per ml., while much higher values were usually found in other types of megaloblastic anaemia. In severe cases of pernicious anaemia the level was below 50 μg. per ml. Joske *et al.*<sup>10</sup> classified the histological findings in specimens of gastric mucosa obtained by biopsy from 100 cases of pernicious anaemia into 4 groups, viz. superficial gastritis

with atrophy (9%), atrophic gastritis (16%), severe atrophic gastritis (35%) and gastric atrophy (40%). In the case reported here these investigations were used to confirm the diagnosis of pernicious anaemia in an African patient with histamine-fast achlorhydria and a severe megaloblastic anaemia which responded well to treatment with vitamin B12.

Liver function tests were of a type often seen among African patients suffering from other diseases, such as intestinal amoebiasis without clinical evidence of cirrhosis of the liver, but in frank cirrhosis much higher  $\gamma$  globulin and lower albumin values have been encountered in this department by Powell.<sup>11</sup> When anaemia occurs in chronic liver disease the bone marrow is normoblastic or macronormoblastic and seldom megaloblastic.<sup>12-14</sup> Megaloblastic anaemia has been described in 3 cases of cirrhosis of the liver by Movitt,<sup>15</sup> and in 4 others by Jandl and Lear,<sup>16</sup> but all were shown to be non-Addisonian. Although some degree of hepatic fibrosis cannot be ruled out in this patient, his anaemia is probably unrelated.

Estimation of serum levels of vitamin B12, examination of biopsy specimens of gastric mucosa, and other techniques such as absorption studies with radio-active vitamin B12 administered orally, are specialized procedures which are not generally available, nor are they usually necessary for the diagnosis of pernicious anaemia in patients of European origin in South Africa. Pernicious anaemia appears to be quite the commonest megaloblastic anaemia in Europeans here as it is in Britain,<sup>17</sup> and in this group any patient with megaloblastic anaemia and histamine-fast achlorhydria should be treated for life with vitamin B12, for the assumption that the patient has pernicious anaemia will usually be correct.

While pernicious anaemia appears to be rare among Africans (and Indians) in South Africa, other forms of megaloblastic anaemia are not uncommon. The commonest variety is associated with pregnancy, but megaloblastic anaemia is not infrequently encountered in males and non-pregnant females, often when diets are poor but sometimes when there are other diseases such as tuberculosis. Response to treatment with folic acid is usually good and appears to be the treatment of choice. It is only necessary until normal blood counts have been restored. In the majority of these cases free acid can be demonstrated on gastric analysis. Sometimes, however, there is histamine-fast achlorhydria, which makes differentiation from Addisonian pernicious anaemia difficult without special investigations such as gastric biopsy and serum vitamin B12 estimation. Of 43 of my cases of megaloblastic anaemia associated with pregnancy there was histamine-fast achlorhydria in 8. Pernicious anaemia was excluded by estimation of the serum vitamin-B12 level in 1 of these, and in 4 others by the absence of anaemia and abnormalities in the central nervous system during follow-up periods without treatment ranging from 1 to 3½ years; the remaining 3 could not be traced after they left hospital, but all were young and the anaemia was clearly related to the pregnancy. Apart from the present case I encountered only 2 probable cases of pernicious anaemia—one African and the other Indian—during the 5-year period in which the cases of megaloblastic anaemia of pregnancy were studied. Thus the assumption that African and Indian patients with megaloblastic anaemia and achlorhydria are suffering from pernicious anaemia will often be incorrect.

When these patients present with gross anaemia treatment should be started as soon as the diagnosis of megaloblastic anaemia has been made. The discomfort of gastric analysis can be avoided for a few days until there is clinical improvement. As a working rule it is suggested that all cases of severe megaloblastic anaemia in Africans and Indians should first be given folic acid. Later gastric analysis can be performed, and repeated if there is no free acid. When there is histamine-fast achlorhydria pernicious anaemia cannot be excluded. However, if the patient is young and has no abnormal neurological signs, and there is a clear relationship to pregnancy or to a dietary deficiency, short-term treatment with folic acid until the blood count is normal will probably yield the best results. It should be safe if the patient is watched over the next 2 years. On the other hand, vitamin B12 by injection should replace folic acid in older patients as soon as achlorhydria has been demonstrated. Such patients will be seen infrequently, but they should be regarded as cases of pernicious anaemia and maintained indefinitely on vitamin B12.

#### SUMMARY

1. A case of pernicious anaemia in a Zulu male is described, the diagnosis being confirmed by estimation of the level of vitamin B12 in the serum and by the histological appearance of a specimen of gastric mucosa obtained at biopsy.

2. The diagnosis and treatment of African and Indian patients with megaloblastic anaemia and histamine-fast achlorhydria is discussed.

Thanks are due to Dr. S. Disler, Superintendent of King Edward VIII Hospital, for facilities; to Prof. A. E. Kark for obtaining the biopsy specimen of gastric mucosa; and to Dr. J. Duncan-Taylor for the histological report. I should also like to acknowledge the assistance of Miss P. F. V. Forbes with the blood counts and vitamin B12 assays.

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# Suid-Afrikaanse Tydskrif vir Geneeskunde

## South African Medical Journal

### VAN DIE REDAKSIE

#### FARMASEUTIESE ADVERTEERMETODES

Gedurende die afgelope maande het 'n aantal artikels en briewe in die *Tydskrif* verskyn waarin die adverteermetodes, wat farmaseutiese firmas gebruik, gekritiseer word. Daar is verwys na die besoeke deur 'mediese verteenwoordigers' en die enorme hoeveelheid literatuur wat per pos aan die geneesheer afgelewer word—omsendbriewe, monsters en kladpapier. Daar is egter nie veel gesê oor advertensies wat in mediese tydskrifte verskyn nie en waarop hierdie en ander mediese tydskrifte tot 'n groot mate staatmaak om hulle rekenings te balanseer. Heel natuurlikerwys het die farmaseutiese firmas op hierdie kritiek gereageer.

Dit is reg dat die mediese profesie sy verpligting behoort te erken en hulde bewys aan moderne artsnyberekunde en metodes van farmaseutiese produksie.

Die sy van artsnyberekunde wat die publiek die meeste sien, is die gewone apteek, maar behalwe dit en die hospitaal-apteek, kry ons die fabriserende farmaseutiese firmas wat nie alleen 'n steeds-toenemende rol by die vervaardiging van geneesmiddels speel nie, maar ook by farmaseutiese en selfs farmakologiese navorsing. Baie van hierdie firmas is groot ondernemings met uitgebreide fabriek en laboratoriums en hulle belange is gewoonlik internasionaal. Ook groot brouerye, deur hulle praktiese belang in miklogie, het gedurende die afgelope tyd met die ontwikkeling en vervaardiging van antibiotika begin.

Afgesien van die instandhouding van navorsinginrigtings van hul eie, bestee sommige van die groot farmaseutiese firmas, veral in die Verenigde State, groot somme om wetenskaplike navorsing deur universiteite, mediese skole en ander publieke inrigtings te help en te ondersteun, en deur studiebeurse en navorsings-fellowships aan individue toe te staan. Een Britse farmaseutiese firma werk op die basis van 'n trust en sy winste word nie as aandele aan aandeelhouders oorgegee nie, maar aan skemas van publieke nut.

Dit is dikwels verklaar dat die hoë koste van sommige farmaseutiese preparate te wyte is aan die groot somme geld wat maatskappye op navorsing spandeer. Dit is heel waarskynlik waar en op 'n indirekte wyse word die siek persoon gedwing om vir die navorsing in sy ongesteldheid te betaal. Dikwels wonder die geneesheer ook tot watter mate die koste van geneesmiddels deur die uitgawe op advertensies verhoog word.

Dit moet besef word dat die farmaseutiese industrie vandag 'n definitiewe plek het in die wêreldorganisasie wat verantwoordelik is vir navorsing op die gebied van geneeskunde en die aanwending van die vrugte van navorsing in mediese praktyk. Nogtans bly hierdie fabriserende chemici kommersiële firmas, en hulle bydrae tot mediese navorsing en praktyk

### EDITORIAL

#### PHARMACEUTICAL ADVERTISING

During recent months a number of articles and letters have appeared in the *Journal* in criticism of the methods of advertising adopted by the pharmaceutical houses. Reference has been made to visits paid by 'medical representatives' and to the vast amount of literature that is delivered to doctors by post—circulars, samples and blotting paper. Not much, however, was said about advertisements in the medical press, on which this and other medical journals to a great extent rely in balancing their accounts. Very naturally the pharmaceutical houses have reacted to this criticism.

It is right that the medical profession should acknowledge its indebtedness and pay tribute to modern pharmacy and methods of pharmaceutical production.

The side of pharmacy of which the public sees most is the chemist's shop, but behind this and the hospital pharmacy there are the manufacturing pharmaceutical houses, which are playing an ever-increasing role not only in the manufacture of drugs but also in pharmaceutical and even pharmacological research. Many of these houses are mighty concerns, operating great factories and laboratories, and commonly international in their interests. Of late, large brewing firms, through their practical interest in mycology, have been drawn into the development and manufacture of antibiotics.

Besides maintaining research institutes of their own, some of the great pharmaceutical houses, especially in the United States, devote large funds to aiding and supporting scientific research by universities, medical schools and other public institutions, and through scholarships and research fellowships granted to individuals. One British pharmaceutical house operates as a trust, its profits being devoted not to dividends for shareholders, but to schemes of public utility.

It has often been said that the high cost of some pharmaceutical preparations is due to the heavy expenditure the companies make on research. This is probably true and in an indirect way the sick man is thus made to pay for the investigation of his disease. The doctor often wonders, too, how much the cost of medicines is increased by expenditure on advertising.

It has to be recognized that pharmaceutical industry today takes a definite place in the world organization which is responsible for research in the field of medicine and the

is fundamenteel afhanklik van die wins wat hulle maak. Dit is dus nie verbasend dat die werksaamhede van 'n firma wat geneesmiddels vervaardig, ten minste net so veel op die vooruitgang van geneesmiddels as op die belange van die firma self gemik is nie.

Om beide hierdie redes vind die vervaardigers van geneesmiddels dit nodig om van moderne metodes gebruik te maak om die praktiserende geneesheer oor die nuutste ontwikkeling op hulle onderskeie gebiede in te lig. Dit is deur die 'behartigende literatuur', wat hulle publiseer, dat die jongste inligting oor sekere farmaseutiese ontwikkelings aan die mediese professie beskikbaar gestel word en dit is slegs deur hulle eie advertensies dat 'n farmaseutiese firma kan verseker dat die feite aangaande sy produkte ten volle onder die aandag van die individuele lede van die mediese professie gebring word. Op watter ander wyse kan hierdie veelsoortige produkte, baie waarvan van groot geneeskundige waarde is, aan die siekes, vir wie hulle bedoel is, beskikbaar gestel word?

Die mediese verteenwoordiger wat ons af en toe met sy tassie vol monsters besoek, is inderdaad een van die verkenners van 'n baie groot organisasie. Sy funksie is opvoedkundig so wel as kommersieel. Hy is *au fait* met die geneesmiddels en preparate wat die firma, wat hy verteenwoordig, vervaardig. Baie keer kom ons vir die eerste maal van hierdie middels te hore wanneer hy ons besoek en dit is beide nodig en raadsaam om te luister na wat hy ons meedeel. Hy hemel nie sy produkte op nie en kan ons nie dwing om dit te koop nie. Hy is 'n opgevoede persoon, besit gewoonlik 'n diploma in aptekerswese, en dit is glad nie ongewoon dat hyself 'n geneesheer is nie, en sy mening oor die produkte van sy firma is die moeite werd om aan te hoor.

application in medical practice of the fruits of research. Nevertheless these manufacturing chemists remain commercial firms, and their contributions to medical research and practice are ultimately dependent upon the profits they make. It is not surprising, then, if the activities of a drug house are directed at least as much to the interests of the firm itself as to the advance of medicine.

For both of these ends the drug houses find it necessary to utilize modern methods in informing the practising doctor of the latest developments in their respective fields. It is by the 'promotional literature' which they publish that the most recent information on certain pharmaceutical developments become available to the medical profession, and it is only through its own advertising that a pharmaceutical firm can ensure that the facts concerning its products are brought fully to the notice of the individual members of the medical profession. How otherwise could these multifarious products, many of them of great medical value, be made available to the sick people for whom they are designed?

The medical representative who pays an occasional visit to us with his little bag of samples is in fact an outlying scout of a very great organization. His function is educative as well as commercial. He is *au fait* with the drugs and preparations that are produced by the firm he represents. Many of these are introduced to us for the first time when he visits us and it is both necessary and wise to listen to what he has to say. He does not press his preparations and cannot force sales. He is an educated man, usually with a pharmacist's diploma and not uncommonly a doctor himself, and his opinions on the products of his firm are well worth listening to.

## 'ASIATIC' INFLUENZA

Most of the facts known to date concerning the present world outbreak of influenza are contained in the statements by Dr. J. J. du Pré le Roux<sup>1</sup> (Secretary for Health) and Dr. J. H. S. Gear,<sup>2</sup> of the South African Institute for Medical Research, which were published in the *Journal* of 15 June 1957. Since that date the epidemic is reported to have spread still more widely and it is to be anticipated that it will eventually involve all parts of the world.

Influenza is a viral disease which appears at irregular intervals and spreads with great rapidity. The viruses differ in different epidemics and immunization cannot be conferred by vaccination with one virus against an attack by another. By the same token it is not practicable to store vaccine against the time when an epidemic may arise, because no one can tell which type of virus will be responsible for the next epidemic. Universal emergency vaccination against a pandemic may therefore be regarded as impracticable, though it is expected that prophylactic vaccine against the present pandemic infection for more limited use will be made available by laboratories in different parts of the world, including South Africa. It is characteristic of influenza that the immunity conferred by an attack is of relatively short duration. This, it is believed, applies also to the immunity conferred by inoculation, which constitutes another obstacle to large-scale protection of the community.

Symptoms of the present Asiatic influenza, mainly respiratory, include coryza, tracheitis and sore throat, and

are ushered in by malaise, pyrexia, backache and headache. On the analogy of other influenza attacks, it is likely that during this early phase, the disease is at its most infective, which probably accounts for its rapid and widespread distribution. As a rule, the fever subsides in 3 or 4 days and the patient makes an uninterrupted recovery. Occasionally pulmonary complications develop, but the widespread influenzal broncho-pneumonia that proved so fatal in the 1918 epidemic has happily not been observed; only a few cases of encephalitis have been noted.

Treatment should be supportive and symptomatic. The patient should be confined to bed and it is strongly recommended that the bed rest should be maintained for at least 48 hours after the fever has subsided. The symptoms should be treated with aspirin or other salicylates and febrifuges generally. There can be no justification for indiscriminately prescribing antibiotics or sulphonamides, for these are known to be completely ineffective against the virus. These drugs should be reserved for the treatment of pulmonary complications as they occur.

Widespread influenza has in the past caused social disorganization amongst the underprivileged section of the community. It might call for the establishment of feeding stations and other emergency measures by local authorities with the support of the Union Government through their Public Health or Social Welfare Departments.

It is a matter for speculation whether the virus can alter

its virulence to be hoped its mild nature at air-

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its virulence or whether its virulence is fixed. It is, however, to be hoped that this present pandemic will still have retained its mild nature when it reaches South Africa. Precautions at air- and seaports are being taken, but the public health

authorities do not consider that the disease can be held at bay for an indefinite period by these measures.

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#### THE SOUTH AFRICAN JOURNAL OF LABORATORY AND CLINICAL MEDICINE

The South African Medical Association, in addition to its official *Journal*, also publishes a quarterly, the *South African Journal of Laboratory and Clinical Medicine*, of which the June issue is now in the press. In publishing this quarterly, the Editor is assisted by an Editorial Board, representing four medical schools, the South African Institute for Medical Research, and the Union Department of Health, as well as the Association itself. This journal is reserved for articles of a more specialized, scientific, academic or detailed character than most of those that appear in our weekly journal.

In the countries of Europe and America a great number of specialist journals are published for the different branches of medicine, some of them by national associations, for instance, by the American Medical Association and the British Medical Association. In South Africa there is a

lack of specialist medical journals, and the Medical Association of South Africa offers its quarterly journal as an alternative medium of publication. There is much work being done in this country which calls for a journal of this character, and the Association is performing a valuable and important duty to its members in publishing it.

The *South African Journal of Laboratory and Clinical Medicine* has a world-wide distribution to medical schools, universities, scientific institutions and medical libraries. It is sold at the price of 7s. 6d. per copy, or on an annual subscription of 25s. 0d. Members of the Association will find the articles of value and interest, and the journal will afford them a convenient means of keeping in touch with original work undertaken in South Africa. Orders and subscriptions should be directed to Medical House, P.O. Box 643, Cape Town.

### MALIGNANT DISEASE IN THE TRANSVAAL\*

#### IV. TUMOURS OF THE VASCULAR SYSTEM

#### V. NEOPLASIA OF THE HAEMOPOIETIC AND RETICULO-ENDOTHELIAL SYSTEM

#### VI. CANCER OF THE ALIMENTARY TRACT

*First Statistical Report of the Radiation Therapy Department of the Johannesburg Group of Hospitals*

P. KEEN, LIONEL COHEN, N. G. DE MOOR, D. DURBACH and M. P. SHAPIRO

*Johannesburg*

#### IV. TUMOURS OF VASCULAR ORIGIN

As previously reported,<sup>1</sup> malignant disease arising primarily in the vascular system is exceedingly rare in the European, accounting for no more than 0.06% of all malignant tumours referred to the Department, but is relatively much commoner in the African, in whom the corresponding frequency is 4.6%. In the 7-year period 1949-55 49 patients in this category were referred for treatment, viz. 46 male and 1 female Bantu, and only 1 male and 1 female European. Of the 47 Bantu patients treated, 5 were histologically diagnosed as haemangiosarcoma of endothelial origin and were radio-resistant, and 42 were classified as typical Kaposi's disease. The 2 European patients were a 68-year old man of East-European Jewish origin, and a 10-year old girl of European descent, born and domiciled in the Transvaal, both showing most of the typical features of Kaposi's disease. Kaposi's disease would appear to be commoner in the Transvaal than in the other provinces it being uncommon in Natives of the Cape Province,<sup>27</sup> where the few cases seen have hailed from Eastern Europe or from Central and East Africa.

*Age and Sex Distribution.* Two-thirds of the cases of Kaposi's disease were under 40 years of age, the average age in the Bantu being 35 years, in contrast to the generally reported average age incidence in Europeans of about 70 years. Males predominated to the extent of 96% of cases.

*Anatomical Distribution.* In most cases of Kaposi's disease the extremities were involved primarily, the disease slowly extending proximally, over many years (Fig. 1). In 60% of cases all four extremities were simultaneously affected, and of the remainder the lower limb was more frequently involved than the upper limb. In about half the cases the disease was uncomplicated and confined to the skin and subcutaneous tissues, and in the others signs of peripheral vascular insufficiency were evident, with oedema of the involved limb and occasionally well-marked endarteritis.

Several cases had some degree of bone involvement of the type described by Davies;<sup>28</sup> in 2 cases there was visceral involvement when first seen, and in one case the spleen and peripheral lymph-nodes appeared to be the only affected organs.<sup>6</sup>

*Management.* In 75% of cases radiotherapy was administered and was found to control the local manifestations of the

\* The previous articles in this series were published in this *Journal*<sup>1,2</sup> of 22 November 1952 and of 29 January 1955.

disease. Four cases required amputation for gangrene, and the two cases with extensive visceral involvement were too advanced for any but symptomatic treatment. Of 20 cases adequately treated and followed for 3 or more years, 12 were alive and well, 5 required irradiation, generally outside the previously treated area, and 3 died, 2 of intercurrent disease



Fig. 1. Typical lesion in Kaposi's disease.

Fig. 2. Advanced haemangiosarcoma of the foot.

and in only 1 was death attributable to visceral extension of the disease.

The true haemangiosarcomata (Fig. 2), referred for irradiation mainly as a therapeutic test, were completely resistant to ordinary doses, resembling in this respect the connective-tissue sarcomata. These were all subsequently treated by radical excision or amputation.

**Discussion.** The frequency in the African of malignant tumours of vascular origin appears to be enormously greater than in any other racial group, comparative series from Europe,<sup>6</sup> the United States<sup>7</sup> and North Africa<sup>8</sup> being relatively fewer, and drawn from much larger populations. The clinical and pathological features of the disease as it affects the South African Bantu have been described by Kaminer and Murray,<sup>9</sup> and since a detailed report on the demography, clinical evolution, pathology, management and response to therapy will be published shortly, these aspects will not be further elaborated here.

#### V. THE LYMPHOMATA AND LEUKAEMIAS

Malignant lymphoma, leukaemia and allied disorders account for about 7% of all malignant tumours referred.<sup>1</sup> Over the 7-year period under review (1949-55) a total of 339 new cases in this category were seen. These comprised 219 Europeans, 104 Bantu, 10 Coloured, 5 Indian and 1 Chinese patient. The proportion of African patients in this series is 31% of the total, compared to 22%, which is the proportion of Africans among all malignant cases referred. This difference

is hardly significant and probably does not indicate any racial predilection for these diseases.

**Age and Sex Distribution.** The age distribution of the reticulo-endothelial and haemopoietic neoplasms is shown

TABLE I. AGE DISTRIBUTION OF THE LYMPHOMATA AND LEUKAEMIAS (RETICULOSES)

Age (years)	Europeans	Bantu	Total
0-9	12	10	22
10-19	17	7	24
20-29	20	18	38
30-39	40	34	74
40-49	42	14	56
50-59	38	10	48
60-69	44	7	51
70-79	20	3	23
80-89	2	1	3
90-99	0	0	0
Totals	235	104	339

in Table I, the average age in the European being 46 and in the Bantu 35 years. As in most tumours, the disease thus appears about a decade earlier in the African. There were 217 males and 122 females in the series.

**Pathology.** For the purpose of this report we have in Table II divided these tumours into 9 pathological groups.

TABLE II. RELATIVE FREQUENCY OF THE LYMPHOMATA AND LEUKAEMIAS

Pathological Condition	European*	Bantu	Total
Chronic myeloid leukaemia	22	16	38
Chronic lymphatic leukaemia	22	8	30
Polycythaemia vera	13	1	14
Follicular lymphoma	13	4	17
Lymphosarcoma	22	5	27
Reticulum-cell sarcoma	59	26	85
Hodgkin's disease	44	21	65
Plasmacytoma and myelomatosis	12	15	27
Mycosis fungoides	8	0	8
Pathology not established	20	8	28
Totals	235	104	339

\* Includes Coloured, Indian and Chinese patients.

Acute leukaemias have been excluded. The clinical features in this series of cases are of no special interest, differing little from those encountered in other centres, and need not be elaborated further.

**Discussion.** As seen in Table II, there are no gross racial differences in susceptibility to these tumours, although polycythaemia and mycosis fungoides appear as relatively infrequent in Africans, and plasmacytomas as slightly commoner in Africans than Europeans. Standard therapeutic procedures were used in the management of these cases, viz. radiation for localized tumours and chemotherapy (nitrogen mustard, triethylenemelamine, myleran or urethane, as indicated) for disseminated disease. Results were similar to those in published series with equivalent staging,<sup>10</sup> there being no specific racial or other local factors of note.

#### VI. CANCER OF THE ALIMENTARY TRACT

Alimentary-tract cancer constituted about 13% of all malignant tumours referred for radiotherapy.<sup>1</sup> Since the majority of gastro-intestinal tumours, particularly the adenocarcino-

mata of stomach and bowel, are generally not treated with radiation, this figure bears no relationship to the true incidence of malignancy in this anatomical division, which in fact is much greater. There were 671 cases treated in the 7-year period 1949-55, 448 in Europeans and 223 in Africans. These totals do not suggest any particular racial predisposition to cancer in the alimentary tract as a whole, although it will be shown that the anatomical distribution of the tumours in the different organs of the alimentary system does indicate marked racial differences in susceptibility.

The distribution of these tumours by race, sex and site is shown in Table III. Lesions of the lip, tongue buccal mucosa,

### Carcinoma of the Lip

For the purpose of this report cancer of the lip has been limited to those malignant tumours that originated on the vermilion border of the lip. Tumours arising on the adjacent skin or mucous membrane and invading the lip secondarily, have been classified as tumours of the skin of the face and as tumours of the buccal mucosa respectively. Of the 232 cases in this series 210 occurred in Europeans and 22 in the Bantu. In the Europeans, 192 cases occurred in males and 18 in females, while of the Bantu total, 20 were in males and 2 in females. Nearly all the cases occurred in persons over the

TABLE III. DISTRIBUTION OF TUMOURS OF THE ALIMENTARY TRACT BY RACE, SEX AND SITE

Race and Sex	Lip	Buccal Mucosa	Tongue	Salivary Gl.	Tonsil and Pharynx	Oesophagus	Stomach and Bowel	Liver	Total (Sites)
European:									
Male .. ..	192	29	51	8	26	21	31	1	359
Female .. ..	18	8	13	5	3	4	38	0	89
Total .. ..	210	37	64	13	29	25	69	1	448
% .. ..	47%	8%	14%	3%	7%	6%	15%	0%	100%
African:									
Male .. ..	20	37	42	14	10	44	2	16	185
Female .. ..	2	7	7	12	4	0	0	6	38
Total .. ..	22	44	49	26	14	44	2	22	223
% .. ..	10%	20%	22%	11%	6%	20%	1%	10%	100%
Totals .. ..	232	81	113	39	43	69	71	23	671

tonsil, pharynx, oesophagus and salivary glands are regularly referred for radiation, and the relative frequency of these cases as shown in the table is probably accurate, but little reliance can be attached to the figures for stomach, bowel and liver, which represent a small and selected group of cases.

In many instances the racial differences are so large as to be statistically unequivocal. Whereas the African cases constitute only about one-third of the total alimentary tract malignancy, the incidence in tumours of salivary glands, buccal mucosa, oesophagus and liver is much higher than in Europeans. The difference is offset, however, by the large preponderance of lip carcinomata among the European population of the Transvaal. Like skin cancer, carcinoma of the lip seems to be of actinic origin, and its incidence is dependent both on exposure to sunlight and on the complexion of the exposed subject.<sup>11</sup>

Despite this, the only conclusion one can come to is that the African has a greater-than-average tendency to malignancy in the salivary glands, buccal mucosa, oesophagus and liver. The relative frequency of cancer in these 4 sites, and particularly the large preponderance of oesophageal cancer in Africans, has been noted too by Higginson;<sup>12</sup> and a significant predisposition to cancer of the oesophagus has also been found in American Negroes by Schrek and Allaben.<sup>13</sup> While no significant conclusions can be drawn for tumours of the tongue and pharynx, the incidence of tongue cancer in the African seems slightly higher, and that of tonsillar and pharyngeal tumours somewhat lower, than in the European.

Our follow-up is incomplete and few conclusions, therefore, can be drawn concerning the efficacy of treatment.

age of 30 years (Table IV). The 3 cases in Bantu under 30 years of age were in albinos.

The histological diagnosis in 98% of the biopsied cases was squamous carcinoma, usually well differentiated, the remainder being 3 cases of squamous papillomata and 1 case of spindle-celled carcinoma in a Bantu. Among the European cases 55 were diagnosed clinically as hyperkeratosis and leukoplakia.

**Clinical Features and Staging.** The majority of lesions first appeared as slight induration or ulceration either where no previous abnormality was noticeable, or at the site of a pre-existing patch of leukoplakia or hyperkeratosis, or at the base of a papilloma. In more advanced cases, when ulceration had occurred, a typical epitheliomatous ulcer with indurated edges was present. Macroscopically, the lesions belonged either to the fungating papillary type or the infiltrating nodular variety, the growth starting as a nodule, a crack or an ulcer and, while the rate of progress was slow, extending gradually in all directions. The cases were divided into 4 clinical stages, as follows:

Stage	Europeans	%	Bantu	%
1. Up to 3 cm. in diameter	133	73	0	0
2. Larger than 3 cm. in diameter	34	19	7	37
3. With mobile metastases	5	3	7	37
4. With fixed metastatic lymph-nodes	10	5	5	26
	182	100	19	100

The majority of the European cases were in stages 1 and 2,

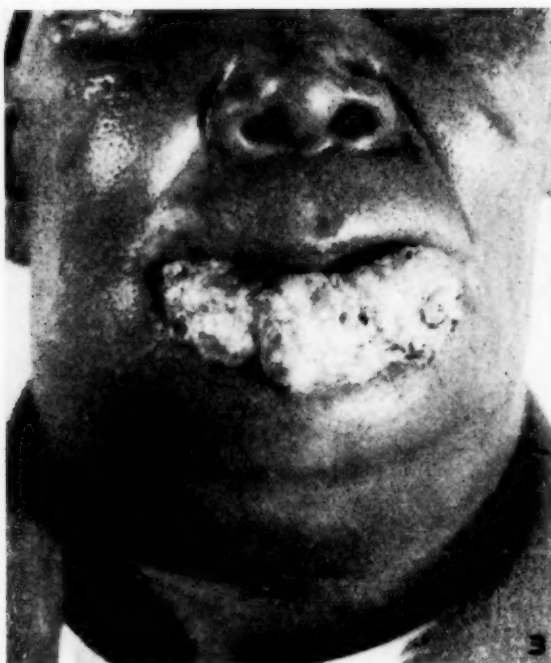


Fig. 3. Carcinoma of the lip. Typical advanced lesion as seen in the African.

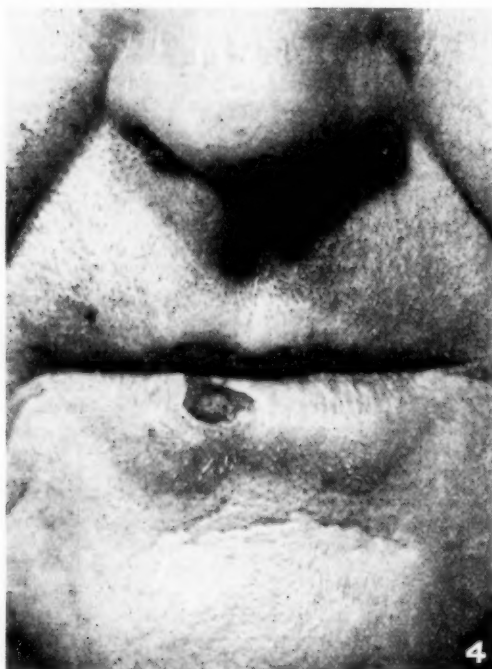


Fig. 4. Carcinoma of the lip. Typical lesion as seen in the European.

while there were no stage 1 cases in the Bantu, the cases falling into stages 2, 3 and 4.

**Diagnosis.** Clinical appearances were usually characteristic, but a few cases required biopsy to establish the nature of the lesion. In cases with lesions on the lip a positive syphilitic serological reaction should not allay suspicions of malignancy, and a biopsy is necessary in all doubtful cases. This was particularly noticeable in several Bantu cases.

**Aetiology.** In the Transvaal exposure to sunlight appears to be a causative factor. Over 95% of the cases occurred in the more exposed lower lip. Only 9% of all lip cancer occurred in the more pigmented Bantu. This is in conformity with other published data.<sup>11</sup>

**Treatment Policy.** In the large majority of cases, radical radiotherapy was the treatment to the primary lesion. This usually took the form of X-ray therapy, but in certain cases radium implantation was carried out. Operable lymph-nodes were always treated surgically, while inoperable cases were treated by external radiation or radium implantation.

**Results of Treatment.** Epithelioma of the lip is a curable disease, but on the whole, our follow-up has been incomplete. However, in the absence of lymph-node involvement, the 5-year cure rate appears to be over 80%, in conformity with published figures, while, when the lymph-nodes are involved, it drops to about 30%.

#### Carcinoma of the Buccal Mucosa

There were 81 cases with tumours arising in the mucous membrane of the mouth, constituting 12% of all cases of alimentary-tract malignancy referred. Of these 81 cases, 37 were Europeans (8%) and 44 were Africans (20%). There seems, therefore, to be a significantly higher incidence in the African than in the European. There were no more than 15 females in this series, showing the preponderant masculine incidence in both racial groups—78% males in Europeans and 84% males among African cases. (See Table III).

The age distribution is shown, together with the other alimentary tumours, in Table IV. The average age in Africans was 52 years, compared to 64 in Europeans. In the African, therefore, the disease appears at least a decade earlier.

The site of origin, was most commonly in the floor of the mouth, 29 of the 81 cases appearing in this region. The next most commonly involved region was the hard palate (25 cases). There were 16 alveolar tumours, and 11 lesions occurred on the mucosal surface of the cheek. There was, apparently, no obvious racial predilection to cancer on any particular portion of the oral cavity.

The histo-pathological diagnosis showed no racial differences. The majority of cases (64) were squamous-cell carcinomata, constituting 77% of the series; 14% were of the 'adnexal' type,<sup>11</sup> including the so-called 'salivary tumours', 'malignant adamantinomatous', and 'basi-squamous cancer', and 9% were anaplastic spheroidal-cell growths.

Management depended on the clinical staging, and the disease was generally more advanced in the Africans. In 43% of the European cases the tumour was apparently confined to the oral cavity; about 70% of patients were considered suitable for 'radical' irradiation, 19% required additional surgery, including cervical block dissections, and only 11% were so advanced that no more than palliative treatment was possible. In the African series, on the other hand, only 18% were confined to the mouth; 45% were suitable for radical radio-

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30-39 ..
40-49 ..
50-59 ..
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TABLE IV. AGE DISTRIBUTION OF ALIMENTARY CANCER BY RACE AND SITE

Age (years)	Lip		Buccal Mucosa		Tongue		Salivary Gl.		Pharynx		Oesophagus		Total (Cases)
	Eur.	Afr.	Eur.	Afr.	Eur.	Afr.	Eur.	Afr.	Eur.	Afr.	Eur.	Afr.	
0-9 .. .. .	0	0	0	0	0	0	0	0	0	0	0	0	0
10-19 .. .. .	0	2	0	0	0	0	1	2	0	0	0	0	5
20-29 .. .. .	1	1	0	2	1	0	0	2	0	1	0	0	8
30-39 .. .. .	26	5	0	4	3	3	1	8	1	3	1	5	60
40-49 .. .. .	38	2	5	10	2	11	2	4	3	2	3	11	93
50-59 .. .. .	48	7	11	14	21	14	3	4	8	6	9	15	160
60-69 .. .. .	40	2	9	9	15	15	3	5	12	2	5	6	123
70-79 .. .. .	45	3	9	5	17	5	3	1	4	0	6	5	103
80-89 .. .. .	12	0	0	0	5	1	0	0	1	0	1	2	25
Total (ages) ..	210	22	37	44	64	49	13	26	29	14	25	44	577*
Average Age ..	59	49	64	52	63	60	56	43	60	49	62	55	—

\*Excluding stomach, bowel and liver (94 cases).

therapy, 16% required surgery, and 39% were too advanced for anything but palliative irradiation.

'Radical' therapy consisted of either 'single-plane' or 'volume' implants, delivering 7,000 gamma-röntgens in 1 week; or of 2- or 3-field, beam-directed, high-voltage X-ray therapy to a tumour dose approaching 5,000 r in 4 weeks. Following the usual skin and mucosal reactions, satisfactory initial responses were regularly attained by these procedures. Where operable lymph-node metastases were present, they were treated by the standard block-dissection operation or, in special cases, by localized radium, radio-gold or radio-tantalum implants.

For palliative purposes, advanced lesions were treated with 2 large opposed fields, delivering a tumour dose of 3,000 r in 10 fractions over a total period of 5 days; i.e. skin doses of 275-300 r delivered twice daily at intervals of not less than 5 hours. This twice-daily irradiation of large oral carcinomata, after van Roojen's method,<sup>15</sup> gave consistently high-grade palliation with minimal skin and mucosal reactions, often leading to 2 years or more of symptom-free survival.

Complications were uncommon, except with alveolar growths, when malignant invasion, osteitis, and aseptic radio-necrosis of the mandible were encountered. Provided the tumour was controlled, it was always possible to remove the necrotic bone, resecting half the mandible if necessary, with reasonably good cosmetic and functional end-results.

#### Carcinoma of the Tongue

There were 64 cases among Europeans and 49 cases among Africans. In view of the fact that Africans were represented by only one-third of the total cases in this group, it would appear that the African has a greater tendency to carcinoma of the tongue than the European. The average age for Europeans was 63.2 and that for Africans 60. The lower average for Africans was accounted for mainly by the larger number of cases complicated by syphilis. The average age of the cases with positive serological tests was 47, and it was noticeable that in these cases the results of treatment were less satisfactory, and the prognosis poorer.

The sex distribution gave no significant racial differences. There were 51 males and 13 females among Europeans, and 42 males and 7 females among Africans.

As with carcinomata in other sites, it was noticeable that in this series the African presented himself for treatment at a much later stage and this is naturally reflected in the results of treatment.

Clinical Staging	Europeans		Africans	
Stage 1 .. .. .	13	20	1	2
Stage 2 .. .. .	13	20	3	6
Stage 3 .. .. .	21	33	12	25
Stage 4 .. .. .	17	27	33	67
	64	100	49	100

It is obvious from this table that the treatment of African cases was mainly palliative.

No obvious aetiological factors were noted, though dental sepsis was more marked in the African cases. It is possible that the Africans' habit of chewing their own brands of snuffs with incinerated additives, which have been shown to contain carcinogens,<sup>3</sup> may prove to be an aetiological factor. The fact that carcinoma of the buccal mucosa appears to be more frequent in Africans (Table III) is in favour of this suggestion.

Treatment. In the majority of cases the primary tumour was treated by radium implantation according to recognized methods. Lymph-node metastases, where operable, were treated by block dissection, and inoperable cases were given palliative radiotherapy. The standard procedure for advanced inoperable cases was by means of two lateral portals treating the primary and metastatic areas in continuity. Treatment was given twice daily as previously described.

Results. Of the African cases which were followed up for 2 years, only one was alive and free from tumour, the remainder having died or showing signs of active disease. Very few of the European cases have been followed up for more than 5 years, but the following results to date are comparable with series published elsewhere:

Stage	Apparent Cures	Dead	Active
1 .. .. .	6	4	2
2 .. .. .	3	7	2
3 and 4 ..	1	13	—

#### Salivary Gland Tumours

During the period under review there were 39 cases of tumours involving salivary glands, viz. 26 Africans (14 males and 12 females) and 13 Europeans (8 males and 5 females). The age distribution is shown in Table IV; it will be noted that in the European the majority occurred in the age-group 50-60 years, the youngest being 15 years old; while in the non-European the disease appeared most commonly in the 40-50 year group, the youngest being 18 years old.

**Pathology.** Despite wide differences in the nomenclature it is generally agreed that these tumours are of epithelial origin and are basically adenocarcinomas. Histologically a variety of appearances were found, the commonest being the pleomorphic adenoma (the so-called 'mixed salivary tumour'). The frequency of various pathological types was as follows: Mixed salivary tumour or pleomorphic adenoma, 20 cases; carcinoma (adeno-, spheroidal-cell, anaplastic), 16 cases; squamous by metaplasia, 2 cases; and basalioma or cylindroma, 1 case.

**Clinical Features.** These tumours are all actually or potentially malignant and present as swellings involving the major or minor salivary glands—most commonly the parotid (80%). Rapid growth, hardness, fixity, and facial palsy are signs in favour of carcinoma. In this series metastases to cervical glands occurred in 3 cases. No distant metastases were detected. The 39 cases which were seen in the department were referred as follows: For immediate post-operative prophylactic irradiation, 24 cases; for post-operative recurrences, 10 cases; recurrences following surgery and irradiation, 1 case; advanced inoperable cases for palliation, 4 cases. It has been found that the post-operative recurrence may occur within months or as long as 25 years later, and that the recurrence tends to be more malignant and invasive than originally the case.

Four cases of *ectopic salivary-gland tumour* were seen, all in non-Europeans—3 females and 1 male. Female preponderance has been found to be characteristic. These tumours were situated in the region of the hard and soft palate, and in structure resembled that of an adamantinoma or basal-cell carcinoma, often classified as 'adenoid cystic carcinoma', 'basalioma', or 'cylindroma'. Clinically they presented as swellings or ulcers, persistent and recurring almost invariably after surgery. The response to irradiation was unsatisfactory and this radio-resistance renders the prognosis serious.

**Treatment Policy.** It is generally accepted that X-ray therapy is not indicated as a primary form of treatment. It is also recognised that surgery alone is followed by a high recurrence rate, figures varying between 30% and 40%. Radical surgery, preserving the facial nerve, with radiation therapy has been the method of choice in these cases. Irradiation was given either by interstitial implant with radium needles giving 6,000 to 7,000 r in 7 days, at the time of surgery, or following wound healing, or when inoperable local recurrence has appeared; or deep X-ray therapy of 4,500-5,000 r in 3 weeks depending on the area to be irradiated.

#### *Tumours of the Oro-pharynx*

There were 43 cases affecting the oro-pharyngeal region, including the tonsils, faucial pillars, hypopharyngeal wall, and soft palate. Tumours of the nasopharynx are excluded (in a previous report<sup>2</sup> they have been described as tumours of the respiratory tract); all sarcomata of reticulo-endothelial origin, even when presenting in the pharynx, are described under the haemopoietic system; tumours of the buccal surface of the hard palate have been collected in the 'buccal mucosa' series; and the post-cricoid tumours are included among carcinomata of the oesophagus. The oro-pharynx is relatively infrequently involved, the 43 cases representing only 6% of all cases of alimentary-tract malignancy. The series comprised 29 Europeans and 14 Africans, which suggested no particular racial susceptibility to tumours in this region. As in other alimentary tumours, males predominate to the

extent of about 85%, there being 26 European and 10 African men, and only 3 European and 4 African women in the whole series.

The *age distribution* is shown in Table IV, the average age in Africans (49 years) being about a decade younger than the Europeans (60 years).

The commonest *site of origin* in this series of pharyngeal tumours was the tonsil, which was affected in 21 cases, 17 (59%) in Europeans, but only 4 (29%) in Africans. Of the remaining 22 cases, the *posterior pharyngeal wall* was primarily affected in 2 (1 European and 1 African), the *faucial pillars* in 8 (6 Europeans and 2 Africans), and the *soft palate* in 12 (5 Europeans and 7 Africans). Of the 7 palatal tumours in Africans, 6 were 'adnexal' or 'salivary' types and are described in the previous section.

The *pathological diagnosis* showed squamous-cell carcinoma in 29 cases (68%)—24 European and 5 African. There were 8 anaplastic carcinomata—5 European and 3 African; and 6 adenomata of the salivary-gland type, the so-called 'adnexal' tumours,<sup>11</sup> all of which occurred in African patients, 5 of them females.

**Clinical Staging.** The disease was confined to the primary site of origin in about one-third of all cases (15 cases), the remainder having either regional lymph-node involvement (16 cases) or both regional nodes and distant lymphatic and metastatic spread (12 cases). In many patients with the local regional lymph-node involvement, the primary and secondary tumour could be treated by radical irradiation *en bloc*.

**Management** of pharyngeal tumours therefore was largely by radical irradiation (60% of cases); a minority (20%) were so advanced as to require palliative radiotherapy only; and 2 patients (5%) were so ill that no treatment could be given. The 6 adnexal tumours (15% of the series) were primarily treated by surgical excision, and referred for irradiation of residual or recurrent growth.

#### *Carcinoma of the Oesophagus*

During the period under review, 69 cases of carcinoma of the oesophagus were referred for treatment. They were 25 Europeans and 44 Bantu, forming 6% and 20% respectively of the total cases of alimentary-tract malignancy. This difference in racial distribution was even more marked in the last 2 years, when there were only 8 European cases compared to 26 Bantu cases. It is well known that Europeans seek advice earlier and a larger proportion are operable and therefore not referred for radiotherapy. However, the frequency of carcinoma of the oesophagus in the dark-skinned races<sup>9</sup> has been noted by others.<sup>11, 12, 13</sup>

The majority of the patients were male, there being only 4 female European cases, 3 of which were post-cricoid carcinomas. There was little difference in the average ages, 62 for Europeans and 57 for the Bantu. A definite histological report was obtained in 51 cases, and of these 50 were well-differentiated squamous carcinomata, there being only 1 adenocarcinoma, which arose in the lower third of the oesophagus.

In the majority of cases (49%) the tumour involved the middle third of the oesophagus, while in 32% the lower end, in 8% the upper third, and in 11% the post-cricoid region, were affected. Except for the preponderance of post-cricoid

\* See also Burrell, R. J. W. (1957); S. Afr. Med. J., 31, 401 (27 April).

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tumours in European women, there appeared to be no significant racial difference in the distribution.

Progressive dysphagia, accompanied by the effects of gradual starvation, were the main presenting features, many of the Bantu patients weighing in the region of 100 lb. Only 5 cases were considered to be early and localized to the oesophagus, as far as could be determined. The diagnosis was confirmed by means of a barium swallow followed by oesophagoscopy and a biopsy.

**Surgical Treatment.** In 2 patients resections were performed, one case dying some months later from intestinal obstruction with no evidence of tumour. In 2 further cases a palliative anastomosis was made, 5 patients were subjected to a thoracotomy and found to be too advanced for surgery, and 14 cases underwent gastrostomy before undergoing a course of radiotherapy in an attempt to improve the general condition before and during treatment.

**Radiotherapy.** During the first 4 years of this report 16 patients received palliative therapy—either intracavitary radium giving 6,500 r at 0.75 cm. distance or X-ray therapy to a tumour dose of about 3,500 r. Thirteen patients underwent radical therapy, which was then given by means of multiple-beam-directed fields to a tumour dose of 5,000 r in 4 weeks, and occasionally in combination with intracavitary radium giving a further 5,000 r at 0.75 cm. in 72 hours. During the last 3 years there has been a change in policy, in that radical X-ray therapy was given by means of 2 or very occasionally 3, 50% grid fields, anterior and posterior, to a tumour dose of 6,000 r. This was always combined with intracavitary radium as previously described. Thirty cases underwent radical therapy, with satisfactory initial response,

12 had palliative therapy, and 2 patients were considered too ill for any form of radiotherapy. Temporary palliation was obtained by using only intracavitary radium as described above. This afforded great relief to patients who otherwise passed into a stage where they were unable even to swallow their saliva, a most distressing symptom.

#### *Stomach, Bowel and Liver*

One can draw no statistically valid conclusions from the small series of selected cases in this category beyond the obvious fact that the stomach, intestine and rectum are relatively immune to carcinogenic stimuli in the African, but very susceptible in Europeans. Conversely, primary liver cancer is almost exclusively confined to Africans. Radiotherapeutic aspects of Bantu cases of carcinoma of the liver in this series have been described elsewhere.<sup>4</sup>

#### *Discussion*

In a previous report,<sup>2</sup> it was noted that, although the general incidence of tumours in one anatomical system, the respiratory tract in that instance, was not very different in the African as compared with the European, there were marked racial differences in the distribution of tumours within the respiratory system. These differences were associated with, and probably attributable to, certain environmental factors and specific aetiological agents.<sup>3</sup> Excluding carcinoma of the lip, which resembles skin cancer in its aetiology, it would seem that the African as compared with the European is much more susceptible to malignancy of the upper alimentary tract and distinctly less prone to tumours of the stomach and bowel. With the salivary glands, buccal mucosa and oesophagus the difference is large and unequivocal, indicating that the incidence of these tumours in the African is about 3 times that in the European. Carcinoma of the tongue shows a similar trend, though the difference is less significant. The trend is completely reversed in the stomach, bowel and rectum,<sup>12</sup> these organs being relatively rarely affected in the African, while the high incidence of primary liver cancer in this series corroborates other well-established data.<sup>16</sup>

Unlike the respiratory-tract cancer, however, the relatively high tumour incidence in specific regions of the alimentary system is not solely characteristic of South African rural tribesmen, but also affects the urban Bantu<sup>12</sup> as well as many other African and Asian communities.<sup>17, 19</sup>

Among aetiological factors to be considered, are endogenous factors such as *genetic* susceptibility, which is unlikely in view of the similar distribution in American Negroes<sup>13</sup> and Asians;<sup>17</sup> *endocrine* factors, the masculine preponderance suggesting a hormonal promoting influence but failing to account for racial differences; *nutritional* defects, such as vitamin-A deficiency associated with leukoplakia, and sideropenic oesophagitis and stomatitis of the type commonly reported in Scandinavia;<sup>18</sup> and *infections* associated with poor oral hygiene, dental caries and syphilis.

On the other hand, it appears that the squamous epithelium of the mouth and oesophagus, but not the glandular epithelium of the stomach and intestine, is also susceptible to *extrinsic* carcinogens and irritants. Both alcohol<sup>20, 21</sup> and tobacco<sup>22, 23</sup> have been incriminated, as well as more exotic habits like betel-nut chewing.<sup>19</sup> A similar local susceptibility has been observed in experimental animals after ingestion of carcinogenic hydrocarbons,<sup>24</sup> the squamous epithelium of the

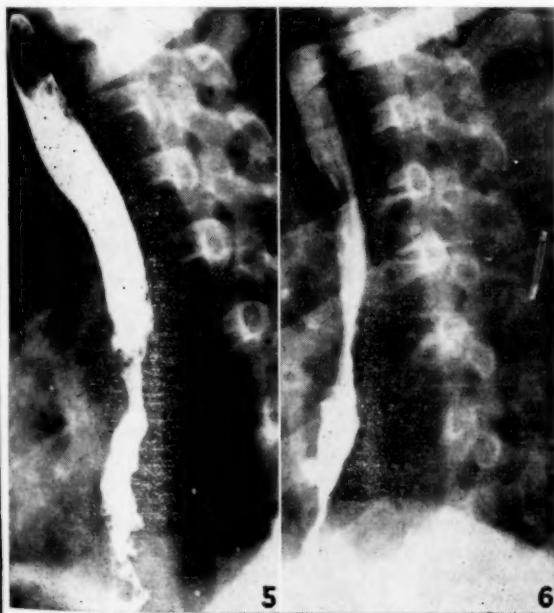


Fig. 5. Inoperable carcinoma of the oesophagus before irradiation treatment.

Fig. 6. Carcinoma of the oesophagus after irradiation resulting in good palliation.

forestomach being much more readily affected than the glandular portion. Alimentary cancer of domestic cats in an urban environment also showed this distribution,<sup>25</sup> presumably attributable to ingestion of atmospheric carcinogens licked from the fur. Since liver cancer in the African also resembles in many respects the hepatoma of rodents induced by azo dye,<sup>1,16</sup> it would seem that the weight of available evidence points to the action of ingested carcinogens as the most probable explanation for racial differences in the distribution of alimentary-tract cancer in South Africa.

## SUMMARY

1. The incidence of tumours affecting the vascular, reticulo-endothelial and alimentary systems in patients presenting for radiotherapy have been analysed, with particular reference to racial differences.

2. Malignant tumours arising from vascular endothelium are exceedingly rare in the European, while haemangio-sarcoma of the Kaposi type ranks among the commonest cutaneous tumours in the Bantu. Kaposi's disease is usually multicentric, primarily affecting the extremities, and individual lesions are, as a rule, radio-sensitive.

3. The lymphomata and leukaemias showed no racial preponderances and no specifically local features of interest.

4. In the alimentary tract, carcinomata of the lip, stomach and intestine were relatively common in Europeans but rare in Africans. Tumours of the salivary glands, buccal mucosa, oesophagus, liver, and probably also the tongue, appeared to be more frequent in the African. The difference in distribution suggests the action of extrinsic carcinogenic agents affecting this region.

This work was supported in part through the Farquhar Bequest Cancer Research Fund. We are indebted to Dr. K. F. Mills,

Medical Superintendent, Johannesburg Hospital, for permission to use hospital records and material.

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## THE IMMUNITY OF THE NATAL INDIAN TO DIPHTHERIA

J. H. MASON, D.Sc., F.R.C.V.S., F.R.S.E.

and

MARY ROBINSON

*South African Institute for Medical Research*

G. D. ENGLISH, M.B., D.P.H.

*Medical Officer of Health, Durban*

The diphtheria antitoxin content of the serum of the Bantu has been assayed on a number of occasions (see Mason *et al.*<sup>1</sup> for the most recent report and for a discussion) but, to our knowledge, no investigation of a similar nature has been carried out on the Natal Indian. Lahiri and More,<sup>2</sup> working in India, failed to find a published reference to the incidence of *Corynebacterium diphtheriae* in throat swabs or of records of Schick tests or of antitoxin titration among random Indian populations. Their own investigation showed that 281 of 294 sera of adults contained at least 0.01 unit of antitoxin per ml. and that, of these 281 sera, 253 contained between 0.05 and 2 units per ml.

Because a knowledge of the distribution of antitoxin among children of different age-groups is important for the profitable planning of immunization campaigns, a survey of the serum antitoxin titres of Durban Indian infants and children was undertaken. In none of the children from whom blood was taken was there a history of diphtheria infection or of artificial immunization.

## EXPERIMENTAL PROCEDURE

The sera of 301 children were assayed for antitoxin, 76 from those aged  $\geq 1.3$  years,\* 67 from those aged 4-6 years and

\*  $\geq$  means equal to or less than.

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TABLE I. D

No. of sera a

Age (years)

$\leq 1$	2
2	3
3	4
4	5
5	6
6	7
7	8
8	9
9	$\geq 10$

the frequer met with i 25 babies children o these, 35 h age limits the child, percentage group, 12 group.

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†  $\geq$  mea

Age (ye

$\leq 1.0$	2.0
2.0	3.0
3.0	4.0
4.0	5.0
5.0	6.0
6.0	7.0
7.0	8.0
8.0	9.0
9.0	$\geq 10.0$

Total



158 from those aged 7 years or more. The intracutaneous method in guinea-pigs was used for titrations, which were carried out at levels differing by 100%. The same lagged toxin, capable of detecting 0.001 unit of antitoxin, was used throughout the investigation.

## RESULTS

The smallest amount of circulating antitoxin necessary to prevent an attack of diphtheria is unknown, but it is usually taken to be between 0.03 and 0.1 unit per ml. of serum. In this report, it is assumed to be 0.1 unit. Table I records

TABLE I. DIPHTHERIA ANTITOXIN CONTENT OF THE SERA OF INDIAN CHILDREN

Age (years)	No. of sera with the indicated units of antitoxin ml serum				Total Subjects	No. not Protected	% not Protected
	$\leq 0.001$ 0.004	0.01- 0.05	0.1- 0.5	$\geq 1.0$			
$\leq 1$	18	5	2	0	76	47	62
2	16	1	6	8			
3	6	1	10	3			
4	2	1	6	6	67	8	12
5	2	1	13	8			
6	1	1	14	12			
7	1	2	25	10	158	11	7
8	4	1	15	8			
9	1	1	8	9			
$\geq 10$	0	1	37	35			

the frequency with which certain serum-antitoxin titres were met with in the children of different age-groups. Only 2 of 25 babies  $\leq 1$  year were immune, whereas only 1 of 38 children of the  $\geq 10$  year† group was not immune and, of these, 35 had 1 unit or more per ml. of serum. Between these age limits there is a rough gradation in immunity—the older the child, the more chance he has of being immune. The percentage of unprotected children was 62% in the  $\leq 1.3$  year group, 12% in the 4-6 year group and 7% in the  $\geq 7$  year group.

In Table II the incidence of, and deaths from, diphtheria in Indians from the second half of 1950 to the first half of 1956 are recorded. These results show that the morbidity, and particularly the mortality, is highest in the young child.

†  $\geq$  means equal to or greater than.

In Table III the results given in Tables I and II are brought together and summarized.

TABLE III. PERCENTAGE OF CHILDREN UNPROTECTED, PERCENTAGE INCIDENCE, AND PERCENTAGE MORTALITY IN EACH AGE GROUP

	Age-groups (years)		
	$\leq 1.3$	4-6	$\geq 7$
Unprotected *	62	12	7
Incidence †	53.8	29.2	17.0
Mortality ‡	77.6	13.4	9

\* Children whose sera contained  $< 0.1$  unit/ml.

† % of total incidence.

‡ % of total mortality.

## DISCUSSION

Before this investigation started, it was assumed that the results would be similar to those previously recorded in the Bantu, viz. that the sera of babies would contain no antitoxin or very little, and that those of older children would contain antitoxin. The results have confirmed this assumption but the percentage of older Indian children with circulating antitoxin is much larger than is found in the Bantu.

If a medical practitioner has doubts about the immune state of a child aged 7 years or more and fears to inject a full dose of a prophylactic because a reaction might be produced if the subject is immune and possibly sensitive, he can apply the Schick test or, preferably, have the serum assayed for antitoxin. The information obtained will permit him freedom of choice in the procedure to be adopted.

If the Schick test is positive, with no indication that the subject is sensitive, he can immunize in the usual way with 2 or 3 doses, each of 25 Lf,‡ of a prophylactic. If the child is Schick-negative and not sensitive, he may elect to inject a small booster dose (see Mason *et al.*<sup>3</sup>), which should cause, at most, only a small local reaction and will almost certainly stimulate the production of antitoxin to an adequate level. Or, even if the Schick test is negative, he may choose to have an assay carried out; if the titre is 0.1 unit of antitoxin or more per ml. of serum there is little point in immunizing further but, if less than this amount, he may decide to inject a small booster.

In mass immunization campaigns, the position is different.

‡ Lf means the amount of toxoid or toxin that is equivalent to 1 unit of antitoxin as determined by the flocculation test.

TABLE II. INCIDENCE OF, AND MORTALITY FROM, DIPHTHERIA AMONG NATAL INDIANS

Age (years)	1950		1951		1952		1953		1954		1955		1956		Total		Case Mortality %
	I	M	I	M	I	M	I	M	I	M	I	M	I	M	I	M	
$\leq 1.0$	4	1	8	2	5	1	6	2	21	4	24	9	16	6	84	25	25.2
2.0	5	2	13	3	2	0	12	3	6	0	20	7	11	3	69	18	
3.0	4	0	11	1	5	0	10	3	5	1	11	2	7	2	53	9	
4.0	4	2	8	0	7	1	10	0	8	1	3	0	6	0	46	4	8.0
5.0	2	0	9	1	2	0	2	0	12	0	9	0	3	0	39	1	
6.0	1	0	3	1	5	1	7	1	3	0	7	1	1	0	27	4	
7.0	0	0	2	0	3	1	2	0	2	0	4	1	0	0	13	2	9.2
8.0	3	0	3	1	4	1	2	0	4	0	3	0	3	1	22	3	
9.0	0	0	1	0	2	0	0	0	1	0	3	0	0	0	7	0	
$\geq 10.0$	2	0	1	0	1	0	6	1	7	0	5	0	1	0	23	1	17.5
Total	25	5	59	9	36	5	57	10	69	6	89	20	48	12	383	67	

(I=incidence; M=mortality)

When thousands of children have to be immunized, the time, labour and expense are not available for the procedure outlined. In their present state of immunity, the Indian children of the  $\geq 7$  year group need, at most, a small booster dose of a prophylactic (1.5 Lf) because, to 'immunize' them with 2 doses, each containing 25 Lf of toxoid, is unnecessary and might cause reactions in many of the recipients. This small booster would raise the antitoxin titres of most or all children already possessing circulating antitoxin but would not act as a very good primary stimulus in those with no immunity at all. But as so many (93%) have titres of 0.1 unit or more per ml., and as nearly 40% have titres of 1.0 unit or more per ml., it is doubtful if raising these still further would repay the time, labour and expense involved. Possibly the only individuals who would really benefit from the practical standpoint are those with titres between 0.004 and 0.04 unit per ml.

Those of the 4-6 year group present a problem. Although only 12% were unprotected (on the assumption that 0.1 unit antitoxin per ml. serum is a protective titre), the incidence was 29.2% of all the children who suffered from diphtheria. On the other hand, the death rate, calculated on the total mortality, was only 13.4% against 77.6% in the  $\geq 1.3$  year old children. Because so many were immune (there were only 5 of 67 children whose sera contained no antitoxin, or only a trace of it) immunization with  $2 \times 25$  Lf of toxoid is not only unnecessary but might be harmful in that reactions might follow. Perhaps the most practical method would be to inject 5 Lf of a particulate antigen such as PTAP, ADF or APT.\* This would act as a satisfactory booster for those actually immune or potentially immune. A further injection of 5 Lf could be given 6 weeks later to those who did not react or reacted only mildly to the first dose, on the assumption that those with immunity are the most likely to be sensitive.

A possible reason for the unexpectedly high incidence of diphtheria in children of the 4-6 year group is the existence of a considerable number of unregistered private schools which cater for the members of this group. These schools are not easy to trace and the authorities experience a considerable

\* Purified toxoid adsorbed on aluminium phosphate, adsorbed dissolved floccules, or alum-precipitated toxoid.

## GENERAL PRINCIPLES IN THE APPROACH TO THE PROBLEM OF ALCOHOLISM IN INDUSTRY

BORIS SEREBRO, M.B., B.Ch. (DUBL.)

Johannesburg

Since 1925, when the policy of tariff protection of secondary industries was adopted, active development and expansion of secondary industry had been proceeding in South Africa. The period of World War II gave our industries additional impetus, which brought them to a highly organized level, where they constitute an important part of our national life and effort.

In the back-wash of this industrial tide problems became evident, some of which have been weathered in older countries through past centuries. The concept that has proved essential in the solution of industrial problems concerned with human activity and human material is that of human relations. In this country industrial leaders, particularly H. J. Van Eck,<sup>1</sup> have stressed the importance of the study of human relations in industry; S. Biesheuvel<sup>2</sup> has put this concept into its proper scientific and industrial perspective; and I. K. M. Scheepers<sup>3</sup> is actively placing the concept at the disposal of South African industry.

amount of difficulty in exercising proper supervision and control over them. It can be assumed that in many of the schools the standard of hygiene is poor and that overcrowded conditions and poor ventilation are not uncommon. Such places, possibly, form foci for the dissemination of infection and almost certainly place more children of the 4-6 year group at risk.

In the past, attention has been given to the young school-going child mainly because he was accessible; it is much more difficult to assemble mothers and their babies than school children, but the results show clearly that attention should be directed to the babies, among whom the percentage unprotected, the incidence, and the case mortality is highest.

### SUMMARY AND CONCLUSIONS

1. The sera of 301 Durban Indian children were assayed for diphtheria antitoxin.
2. The sera of 62% of 76 children of the age-group  $\geq 1.3$  years contained less than 0.1 unit per ml.; 40 of these sera contained from  $<0.001$  to 0.004 unit per ml. The sera of 88% of 67 children between the ages of 4 and 6 years and of 93% of 158 children of 7 years or more contained at least 0.1 unit of diphtheria antitoxin per ml.
3. There was a correlation between the age of the children, the incidence of, and death rate from, diphtheria, and the antitoxin content of the sera. The older the child, the less was the incidence and particularly the mortality and the higher was the percentage with protective serum-levels.
4. In Indian children of Natal, immunization with  $2 \times 25$  Lf doses of a suitable prophylactic should be carried out chiefly on babies. Those of the 4-6 year group could be satisfactorily dealt with by  $2 \times 5$  Lf doses and those of the 7 year group with, at most, one booster dose of 5 Lf.

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One outcome has been the 'Conservation of Man-Power Unit.' This Unit is concerned with the problem of alcoholism, and has developed certain principles which include, as well as stem from, the concept of effective human relations in industry. These principles are applied in the day-to-day approach to workers who are addicted to alcohol, and to their rehabilitation.

The Unit has adopted the following 4 main principles in the rehabilitation of the alcohol-addicted worker:

1. THE CONSCIOUS ACCEPTANCE OF POSITIVE ACTIVE ATTITUDES IN THE FIELD OF HUMAN RELATIONS

The acceptance of this principle by management implies an active attitude to the problem of alcoholism. Management as a rule, and in fact the intelligent man in the street, appreciates the many difficulties that are strewn in the path of the chronic alcoholic.

When the picture is clarified by explanation, propaganda, or education,<sup>3</sup> it usually evokes a progressive attitude towards this problem of human relations.

Unfortunately, a sympathetic attitude alone is not enough in the actual therapy of alcoholism, for it represents an activity value that is very negative and quantitatively low. Besides sympathy and understanding, the handling of the alcoholic demands a positive and firm approach to offset the inadequacy which is so often the hall-mark of the alcoholic.

In many instances we have found management passive in relation to alcoholic workers and their problems. The workers sense and become aware of such negative attitudes. This tends to enhance their sense of guilt and makes them feel still more inadequate. Under such circumstances a widening rift appears between management and the workers, and the gulf is of such a nature that there is a break-down in the communication between the one and the other, and deterioration of labour-management relationship. This situation is not in the best interest of the alcohol-addicted worker nor, indeed, of the apparently normal worker. Relations should be on a plane of practical usefulness, and those who wish to apply this principle must offer something tangible and real. A. B. Waring<sup>4</sup> aptly sums up this practical aspect in his words: 'Man, being a reasoning animal, is prepared to accept change when it is properly presented, and when he is satisfied that he will benefit, or when his future depends upon it.'

#### GOOD LABOUR AND MANAGEMENT RELATIONS<sup>5</sup>

This principle follows from the conscious acceptance of positive, active attitudes in the field of human relations. The alcohol-addicted worker, from a management point of view, is, to say the very least, an unnecessary burden, while the presence in an organization of large numbers of untreated and uncared-for alcoholics is a tangible item in commodity costing, which may ultimately be reflected in the cost and sales popularity of the item produced or the commodity or service offered,<sup>6</sup> and may even become the bone of contention at any wage negotiations. The presence of uncared-for alcoholics in an organization is indicative of a breakdown in the communication on all levels, and is detrimental to the co-ordination and smooth functioning of the various departments or units. Such a situation in the work environment produces frustration even in the normal worker, while in the alcohol-addicted worker, who is generally far more sensitive, it can prove positively disastrous. From the labour point of view such a break-down in communication must affect the worker's group or trade union.

The labour force of any organization is recruited and selected by management, and it is left entirely to management to decide the type, the character, and other characteristics of the workers who is to be employed. If then, a management is concerned with good labour and management relations, and has attitudes in keeping with this interest, it will, as far as possible, select personnel who will in turn reflect these attitudes to the greatest extent.

When, however, the worker is placed in an environment of strained labour and management relations, the worker-group develops unfavourable beliefs and convictions about management. These beliefs create attitudes in the minds of the group which breed suspicion of any action taken by management, leads to resentment of orders conveyed down the organizational line, and creates a vicious circle which ultimately manifests itself in a host of anti-social traits, usually passive in nature. As for the worker himself, the effects of such impaired communication is transmitted down throughout the organization, and creates its maximum havoc at the basal industrial level—the worker level. Here, in addition to the group-acquired passive anti-social feeling, there is a tendency for the worker to show more individual active or negative anti-social attitudes, which manifest themselves in lack of pride in the job<sup>7</sup> and in the group or trade union to which he may belong. Such a worker probably never attends a meeting of his trade union or staff association, except perhaps when a monetary penalty is imposed for absence or pressure is exerted on the group itself; particularly, for instance, when the worker's presence and vote are necessary to support demands to be served on management. The group that has acquired this attitude shows little or no interest in the welfare of its individual workers, and all welfare becomes of the armchair variety; while field work which, amongst other activities, entails visits to the homes of workers, is usually non-existent. In such a group we find that the alcohol-addicted worker is shunned and despised, and the group as a whole is not interested in him.

On the other hand, in progressive trade unions the rank and file of the workers take an active and lively interest in the group, in its activities generally, and also in the welfare of their fellow workers; while attached to their organizations are flourishing sections that deal with matters of welfare, and cover a wide field. In such trade unions the alcoholic acquires the protection and the support of the group, which is essential for his adequate rehabilitation.

#### RETURNING THE ALCOHOLIC TO HIS NORMAL ENVIRONMENT

In this principle we are not primarily concerned with acute alcoholism *per se*, or acute alcoholism supervening on chronic, except that it usually requires a short stay in a suitable hospital under expert management. It is the follow-up phase, after discharge from hospital, that is of major importance to the Unit. Our approach at this stage is that the quicker the worker is returned to his normal environment the better for his ultimate rehabilitation, and his follow-up becomes the concern of the Unit.

The normal environment from the Unit's point of view is the work and home environment, and all efforts are directed at getting the worker back to his job—back into the routine to which he is accustomed, to perform those skills and artifices in which he has been trained, and where he becomes once more a link in the normal communication of his industrial organization and is in daily constant contact with his group,<sup>8</sup> his fellow-workers. He is, as a result of this return to his job, under the same discipline and codes of behaviour that the group demands from all its members, and is given a measure of protection while at the same time enjoying the advantages that trade unionism affords the worker.

This return to the job makes the worker independent and self-supporting, which is a most necessary factor in the formation of economic freedom and in making the worker independent of extrinsic support. Such independence of support must increase the well-being of the worker, and while being most useful in building up morale, plays an important part in therapy and in the rehabilitation of the individual.<sup>9</sup>

The return of the worker to his normal occupation is the signal, at the request of either labour or management, for the Unit to take the individual under its care, with his own concurrence. He attends the Unit daily for a period of about 3 years, and is constantly under the care of the various divisions of the Unit.<sup>8</sup>

The medical division, under the direction of the Unit medical officer is responsible for the initial assessment of the individual's health, and for reversing, if at all possible, organic tissue changes that may have taken place. The medical division also supervises the daily administration of Disulfiram (tetra-ethyl-thiuram disulphide), as well as supplying other supportive measures that are found necessary.

The psychological division considers the problems of the alcoholic workers, how they tie up with his craving for liquor and his indulgence in it, and helps the patient to see his difficulties in a new light, to cope and live with them, and to find new interests and outlets.

The social relations division has social-relations officers, whose job it is to pay periodic calls at the homes of workers under the care of the Unit. Here they are able to get first-hand pictures of the home environment and report to the Unit medical officer any shortcomings or aspects that need attention, so that, after discussion, a line of action can be decided upon and carried out by the social-relations officer. This officer is himself a worker drawn from the same group as the case under his care. That the social-relations officers are themselves workers forges links that bind the group together more firmly. The worker feels he belongs, and is wanted—that the Unit, and particularly his own group, is actively interested. At the same time this has the indirect advantage of strengthening the worker's interest in the trade union or staff association that supplies social-relations officers to be trained and work with this Unit.

If, in the course of an interview by the various divisions of the Unit, it is found that a worker has financial or legal difficulties, he is referred for advice to the financial or the legal counsellor, as the case demands. The financial counsellor is an accountant, and the legal counsellor a legal practitioner in active practice. These people smooth out the many financial and legal problems that confront the alcoholic, who is often in financial straits and a victim of litigation.

## THE ALCOHOLIC IS SUFFERING FROM A REAL ILLNESS

To treat alcoholism successfully it is necessary to accept this principle and recognize that the patient is ill.<sup>9</sup> In recent years it has time and again been reiterated that alcoholism is a chronic, relapsing, and at-the-moment incurable disease;<sup>10</sup> but this fundamental truth, although fully acceptable to workers in the field concerned, whether directly or indirectly, with this problem, is not always accepted even by those who are in constant touch with ill-health and disease. The unwillingness to accept this fundamental fact stems probably from the universal outlook that alcoholism is a self-imposed condition, and that the alcoholic is directly and entirely responsible for his state of mind and health. With this attitude of mind go such ideas and phrases as: 'It is all a matter of will-power,' 'A man of his intelligence and education should know better,' 'What can one expect of the working-class?' or, in the best tradition, 'He is no gentleman, just can't hold his liquor.' An apparent social barrier has been built around the alcoholic, and the concept that the alcoholic is in truth a sick man goes against the common view.

Although the medical profession has accepted the principle that the alcoholic is a sick man, yet some of its members find the acceptance of the fact difficult, in spite of the intensive research and the teaching of men prominent in this field, both in Europe and the USA. In this respect it is interesting to note that contract-practice groups which provide therapeutic medical services in this country, distinctly and definitely exclude alcoholism as an entity to be treated. This tends to make treatment of alcoholism by the contracting doctors a most difficult task, tends to push this disease underground, and still further enhances the alcohol-addicted patient's feeling that his illness is one to be ashamed of.

It is opportune to draw the attention of existing or future therapeutic contract-practice organizations or health insurance schemes

to the untold damage that is created by the exclusion of the alcoholic from health benefits.

## SUMMARY

In the approach to the problem of alcoholism the Conservation of Man-Power Unit has adopted the following 4 main principles which are essential in the rehabilitation of the alcohol-addicted worker.

1. The principle of the conscious acceptance of positive active attitudes in the field of human relations.
2. The principle of good labour and management relations.
3. The principle of returning the alcoholic to his normal environment.
4. The principle that the alcoholic is suffering from a real illness.

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## THE OLDER WOMAN\*

J. C. COETZEE, M.A., M.A.O., L.M., F.R.C.O.G.

Consulting Gynaecologist, Groote Schuur Hospital, Cape Town; Chairman, Cape Town Sub-group, South African Society of Gynaecologists and Obstetricians

My plea tonight is for the care of the woman over 50 years old. The traditional negative attitude of the medical profession toward older people is gradually changing. This is a direct result of the great increase in the total number of the aged that has occurred in the past few decades. In lengthening the span of life, medical science has created a problem for itself, and it has become increasingly evident that this problem must be studied more intensively and systematically than hitherto. A recent Editorial in the *South African Medical Journal* refers to the importance of the health of people in the older age-groups from a social and economic point of view.

Geriatric literature abounds in studies of the endocrine, nutritional, psychological and surgical aspects in women. Carlson in his book on *Physiologic Changes in Aging* summarizes those progressive age-changes which are not, as far as known, related to specific diseases. In his summing up he states that in the process of aging there is (1) gradual tissue desiccation, (2) gradual retardation of cell division, cell growth, and tissue repair, (3) lowered rate of oxidation, the basal metabolic rate gradually falling, (4) cellular atrophy, degeneration and fatty infiltration, (5) decreased speed, strength and endurance of neuromuscular reactions, (6) gradual decrease in tissue elasticity, (7) progressive degeneration and atrophy of the nervous system—impaired vision, hearing, memory and mental endurance.

**Ovary.** The extent to which atrophy of the ovary may proceed may be realized by observing its small, nearly fibrous nature at the age of 70-80. The decline in ovarian function associated with aging manifests itself clinically in several different ways. A common accompaniment of the menopause is osteoporosis. One must always be on the look out for sudden attacks of backache

in the elderly woman; it may often be due to the collapse of one of the vertebrae. Osteoporosis is far commoner in women than in men. Jackson in a paper presented at the South African Medical Congress held in Port Elizabeth 3 years ago stated that senile osteoporosis was due to a lack of oestrogen. The condition may occur both in the natural and in the artificial menopause. According to Jackson, osteoporosis does not arise primarily as a disorder of calcium and phosphorus metabolism but rather as a deficiency in the continued bone formation in the protein matrix. Mol'awer states that the principal etiologic factor in senile osteoporosis is the increase of the anti-anabolic hormones over the anabolic hormones. Oestrogen, we know, is a highly anabolic hormone. The climacteric is normally associated with vasomotor instability. The direct cause of hot flushes is not known. Nervous tension, fatigue, illness, and physical and emotional stress often aggravate hot flushes.

**Thyroid.** Four histological changes in the thyroid gland are described in the aged, viz. (1) decrease in the size of the follicle, (2) decrease in the amount of the colloid, (3) atrophy of the glandular epithelium, and (4) diffuse increase in the intercellular connective tissue. As regards function, there is no certain correlation between age and iodine concentration. In both sexes a gradual and regular decline with age is observed in the oxygen consumption.

**Uterus.** Master states that the atrophic myometrium contains very little water and the atrophic cells are packed tightly together. Novak classifies the different forms of post-menopausal endometrium as follows:

1. The thin atrophic mucosa so commonly spoken of as the senile endometrium. This is the most frequent finding in women past the menopause.
2. A mucosa of varying thickness but not always very thin, showing the *Swiss cheese* pattern of hyperplasia but obviously of inactive, retrogressive type.

\* Valedictory Address delivered at the annual general meeting of the Cape Town Sub-group, South African Society of Gynaecologists and Obstetricians.

3. Active scattered patches of vaginal levels, glycogen of the vaginal bacilli are physiologic pathologic

## Therapy

Oestrogen Caldwell and behaviour a treated with the symptom menopause must, of course, treated 50 varying doses of calcium. It is such a beneficial effect will outweigh a possible increase. Controlled choice, would or postpone. Androgen or where a protein-spacer. Cortisone in various the aged is these drugs have failed. use of hydrocortisone were most other dairy degree of health use of vitamin mentation mineral substances the vitality any age, but states that it is living at less than the minerals we may produce

The Report of Medical published (The person du Toit, F. of Health, Ende (Dean Dr. T. Alty H. Craib Witwatersrand Union Health Department The Com and Durban visited 38 evidence from the body The last



3. Active hyperplasia, either diffuse or, more frequently, in scattered patches in the endometrium.

**Vagina and Vulva.** As age advances, with a fall in oestrogen levels, glycogen disappears from the epithelial cells and the pH of the vaginal secretion rises. In an alkaline medium Döderlein bacilli are unable to exist. The epithelium becomes thin. These physiological changes are not infrequently exaggerated in the pathological condition known as senile vaginitis.

#### Therapy

**Oestrogen** improves the emotional state of elderly women. Caldwell and Watson record an improvement in bodily vigour, behaviour and interest in a controlled group of 50 elderly women treated with oestrogen. Oestrogen delays the onset and, alleviates the symptoms of senile psychosis. It may help to prevent post-menopausal osteoporosis. The unfavourable effects of oestrogen must, of course, also be considered. Masters, of Baltimore, treated 50 controlled patients continuously for 5 years with varying doses of oestrogens cyclically administered; no development of carcinoma of the ovary, corpus or cervix was noted. It is such controlled series as this that will decide whether the beneficial effects of oestrogen therapy in post-menopausal women will outweigh its hazards. Post-menopausal uterine bleeding is a possible ill-effect, which will cause alarm in the elderly patient. Controlled dosage is the answer. Some gynaecologists are opposed to oestrogenic therapy. Most women, however, if given the choice, would prefer to have their menopausal hot flushes prevented or postponed.

**Androgens.** When an elderly person's muscles become flabby, or where a debilitated person must be prepared for surgery, the protein-sparing action of androgens may be of value.

**Cortisone.** Because of the dramatic beneficial effects of cortisone in various diseases, the temptation to use it therapeutically in the aged is great. Caution, however, must be used in prescribing these drugs to the aged. *Pruritus vulvae*, when other methods have failed, is often dramatically relieved by the local or topical use of hydrocortisone.

**Nutrition.** A survey of diets in the elderly, showed that they were most often deficient in yellow and green vegetables, milk and other dairy products, and in citrus fruits. There seems to be a degree of hypometabolism in the aged, and an inability to make use of vitamins supplied in adequate quantities in the diet. Supplementation of diet is essential. There are several excellent vitamin-mineral supplements on the market which definitely improve the vitality of the aged. 'Vitality' is something to be coveted in any age, but during the latter years this is especially so. Kaplan states that in a series of 53 persons over 60 years of age, who were living at home, in about one-half the ascorbic-acid levels were less than the expected minimum. Calories, protein, vitamins and minerals were also found to be inadequate. A low protein intake may produce nervousness and irritability. Senile pruritus, bed

sores, wounds that do not heal, and eczematosis, often respond favourably to high-protein diets. Fatigue, oedema, anaemia and lowered resistance in many old people may be related to poor distribution of protein in the diet.

**Geriatric Gynaecology.** After the menopause there are skin changes of the entire genitalia, relaxation of the pelvic floor, tumours and infections. Particular care should be given to nutrition, to the cardiovascular and circulatory status of the patient and, in cases of operation, to the details of anaesthesia. It is virtually impossible to correct nutritional hypoproteinaemia with blood transfusions or plasma unless they are given repeatedly and in large doses. Excessive fluid therapy, particularly with sodium-containing fluids, is to be avoided, especially in cases of cardiovascular diseases. Prof. J. H. Louw has recently drawn attention to the pitfalls of intravenous sodium therapy before and after operations. Masters has emphasized that a systolic blood pressure ranging from 160 to 190 mm. Hg, with a diastolic of 100-160 is not uncommon after the age of 50. No treatment is necessary except in coronary thrombosis or in serious cardiac lesions.

**Psychological and Social.** Women tend to fall into two broad categories, according as they have responded favourably or unfavourably to life's physical and psychological strains and stresses. Hammond has described the medical problems of the aged as been complicated by 'multiplicity, chronicity and duplicity'. He adds that with the increasing attention that is being paid, the goal of good health in old age does not seem unattainable. He gives 5 essentials of good mental health in the aged:

*A Home*—An anchorage, a place in to which to belong.

*A Job*—For pride, to pass time, to be gainful to self if possible but useful to others in any event.

*Friends*—Old and new, and opportunities to widen those relationships.

*Philosophy*—A spiritual sense of the worthiness of the 'continuing to live'.

*Good Health*—As free from pain as possible and a will and ability to by-pass it when present.

I would like to add one more essential to Hammond's list:

*A Sense of Humour*—To brighten the twilight years.

I once more emphasize that everything should be done to make life more bearable in its later stages. The motto of the American Gerontological Society should serve as a striking summary of the aims and duties of every gynaecologist: 'To add life to years, not just years to life.'

This address was made possible only by quoting freely from articles by different writers, and primarily from a review entitled *The Menopause* by F. Jackson Stoddard, of the Department of Obstetrics and Gynaecology, Marquette University School of Medicine, Milwaukee, Wisconsin.

## COORDINATION OF MEDICAL RESEARCH

The Report of the Commission of Enquiry into the Coordination of Medical Research, dated 15 December 1955, has now been published (U.G. 14/1957).

The personnel of the Commission was as follows: Dr. P. J. du Toit, F.R.S., Chairman, Dr. J. P. de Villiers (Medical Officer of Health, Cape Divisional Council), the late Prof. M. van den Ende (Dean of the Faculty of Medicine, University of Cape Town), Dr. T. Alty (Principal, Rhodes University, Grahamstown), Dr. W. H. Craib (formerly Professor of Medicine, University of the Witwatersrand), Dr. B. M. Clark (Deputy Chief Health Officer, Union Health Department) and Mr. G. Kemsley (Union Health Department), Secretary.

The Commission met at Pretoria, Johannesburg, Cape Town and Durban between 23 August 1954 and 18 February 1955 and visited 38 institutions and organizations. It received written evidence from 42 organizations and persons, and 111 persons gave evidence before the Commission.

The body of the Report fills 39 pages of the blue-book.

The last chapter consists of a summary of the Commission's

main recommendations, which is set out as follows, together with certain matter extracted from the body of the Report:

#### SUMMARY OF MAIN RECOMMENDATIONS

I. That all medical research in South Africa be coordinated under a single body.

II. That this body advise the Government on the disposal of all funds which it makes available specifically for medical research.

III. That this body be established within the framework of the existing Council for Scientific and Industrial Research (C.S.I.R.) and replace the present Medical and Dental Research Advisory Committee.

IV. That this new body be called 'The Council for Research in Medical Sciences (C.R.M.S.)'.

V. That in view of its increased responsibility the name of the Council of Scientific and Industrial Research be changed to the 'South African National Research Organization (S.A.N.R.O.)'.

VI. That the constitution and functions of the C.R.M.S. be as suggested in para. 277.\*

VII. That the Council of S.A.N.R.O. shall always include at least one medical member.

VIII. That a full-time post of Vice-President (Medical Sciences) of S.A.N.R.O. be created. (Para. 348).†

IX. That the support of medical research through the system of Units, *ad hoc* grants, etc., be continued and extended.

X. That further support to medical research be given through a new system of Group Projects. (Para. 282).‡

XI. That steps be taken in suitable cases to ensure the continuance of work in a Unit on the withdrawal of its leader.

XII. That steps be taken to ensure satisfactory security of tenure of the scientific and technical staffs of Units and Projects.

XIII. That C.R.M.S. maintain adequate decentralization of medical research in the Union.

XIV. That the research activities of the South African Institute for Medical Research, the Poliomyelitis Research Foundation and the Pneumococcal Research Unit be associated in a new National Institute for Medical Research (N.I.M.R.).

XV. That the required modification of the organizations of the 3 constituent institutions within the N.I.M.R. be in accordance with the recommendations in the Report.

XVI. That a Coordinating Board of the N.I.M.R. be constituted.

XVII. That research in certain fields such as mental diseases and leprosy at present handled by the Union Health Department be encouraged.

XVIII. That the activities of the Plague Research Laboratory be expanded.

XIX. That research on Bilharzia be encouraged by the coordination suggested in the Report.\*\*

XX. That the dental research of the Department of Health be integrated into the activities of the (C.S.I.R.) Dental Research Unit.

XXI. That the Department of Health consider the appointment of a scientific advisory committee on research within the Department.

XXII. That the Department of Agriculture initiate a special investigation into the closer coordination of veterinary research with research in other medical sciences.

XXIII. That as an immediate measure coordination between veterinary and medical research be facilitated by the steps recommended in the Report.

XXIV. That legislation be enacted as early as possible to enable the Provincial Administrations to participate in medical research.

XXV. That the Scientific Council Act (Act No. 33 of 1945) be amended to provide specifically for medical research within its scope.

XXVI. That S.A.N.R.O. would be most appropriately placed for administrative purposes under the Prime Minister.

\* 277. The constitution of the C.R.M.S. recommended by your Commission is as follows:

1. The Council to be styled the Council for Research in Medical Sciences (C.R.M.S.), shall be constituted with membership as follows:

(a) The President of S.A.N.R.O.  
(b) The Vice-President (Medical Sciences) of S.A.N.R.O., who shall be Chairman of the Council.

(c) The Chief Health Officer for the Union or his Deputy.  
(d) The director of veterinary research or his deputy.

(e) Three members appointed by the Council of S.A.N.R.O. and two alternates, also appointed by that Council.

(f) Six members and two alternates appointed by the Council of S.A.N.R.O. on the recommendation of the C.R.M.S.

The members appointed under (e) and (f) shall be selected for their scientific qualifications rather than their general ability and

shall include at least one person with special knowledge of dental science and one with special knowledge of veterinary science.

2. One member of group (e) above and two members of group (f), initially selected by lot, shall retire annually and no retiring member shall be eligible for re-election for at least one year except at the discretion of the Council of S.A.N.R.O.

3. The terms of reference and the functions of the C.R.M.S. shall be:

(a) to initiate, stimulate, and coordinate medical research in South Africa;

(b) on all matters concerning medical, dental or veterinary research, to advise the Council of S.A.N.R.O.;

(c) when requested, to advise departments of Government, educational institutions, and agencies which undertake medical research, and to serve as a liaison between these bodies;

(d) to draw up a programme and proposals for an annual budget for research including grants and bursaries, for consideration by the Council of S.A.N.R.O.;

(e) to recommend the appointment of sub-committees and panels to deal with special problems arising out of the above;

(f) periodically to review the facilities for research in South Africa and to submit recommendations thereon;

(g) whenever invited to do so to advise any Department of Government through S.A.N.R.O. as to the desirability or otherwise of any national appeal for funds for medical research and at the request of a Department to make proposals regarding possible Government subsidization of such appeal funds;

(h) to assume such other functions as may be determined from time to time by S.A.N.R.O.

It will also be noted that it is recommended that all the members to be specially appointed to the C.R.M.S. should be selected for their personal qualities with special reference to their eminence in the field of science; they should not represent any particular body or interest but should be appointed in a purely individual capacity.

† 348. When it comes to the medical sciences we have no hesitation in recommending definitely that a Vice-President be appointed who could advise the President and the Council on all matters relating to medical research. He should also preside over the C.R.M.S., which we recommend should replace the existing Medical and Dental Research Advisory Committee. If the recommendations contained in this report are adopted, the C.R.M.S. will become the focal point of all medical research in South Africa. It will be in a position to coordinate all such research and to exert a great influence on the future extension and development of this research in all its phases.

‡ 282. Your Commission further recommends that the system of medical research units be extended to include a new organization, the group project already mentioned. . . Any such group should consist of two or more qualified research workers, working in the same or related fields, who have already proved their capacity, even if no one of them can suitably be designated as a unit leader. No application for the support of a project should be entertained unless the investigation proposed is one of importance which can be approved by the C.R.M.S. The project should have a scientific advisory committee which should perform the duties of the corresponding committee of a unit. In addition, in the absence of any single project leader, the advisory committee should probably give more detailed supervision to the work of the project and its coordination.

\*\* The present two Bilharzia research organizations are in the Department of Health and the C.S.I.R. respectively.

## IMMUNIZATION AGAINST TETANUS

A resolution<sup>1</sup> of the Cape Western Branch, supported by Federal Council, was forwarded to the Secretary for Health, requesting 'that such steps as may be required to encourage and extend the practice of active immunization against tetanus should be taken. In view of the serious nature of the disease and the increasing number of severe reactions that are occurring following the use of

tetanus anti-serum, it is felt that immunization against tetanus should receive the same propaganda and encouragement by public health authorities as is accorded to diphtheria and pertussis'.

In reply Dr. J. J. du Pré le Roux, Secretary for Health, has addressed the following letter dated 3 June to Dr. Tonkin, Secretary of the Medical Association of South Africa:

'In reply to this Department of Health has been brought to my attention the Circular N. 100 of 1956. You will be aware that tetanus is a very serious and often fatal disease. It is caused by a toxin which is produced by a bacterium which is found in the soil. The best protection against tetanus is by the use of a vaccine. Parents of children should be encouraged to have their children vaccinated against tetanus. The vaccine is a very safe and effective one.

At a clinic on 26 April, 1957, and associated with the W. de Haan Hospital, prepared by Dr. Toit showed

This paper was read by Dr. M. J. du Toit at the 10th Annual Meeting of the Union of South African Medical Societies, held at the University of Cape Town, on 26 April, 1957. The experience of the unit mentioned in the study of the disease is a very interesting one. In a number of cases, viz. (a) the arteries, and (b) the veins, a microscopic examination of the surface of the junction of the downward and upward flow of the blood, and the circulation of the blood, showed that the bone marrow was the source of the disease.

The very nature of the disease is such that it is often fatal. It is caused by a toxin which is produced by a bacterium which is found in the soil. The best protection against tetanus is by the use of a vaccine. Parents of children should be encouraged to have their children vaccinated against tetanus. The vaccine is a very safe and effective one. When the disease is first noticed, it is often too late to do anything. It is a very serious and often fatal disease. It is caused by a toxin which is produced by a bacterium which is found in the soil. The best protection against tetanus is by the use of a vaccine. Parents of children should be encouraged to have their children vaccinated against tetanus. The vaccine is a very safe and effective one.

'In reply to your letter of 16 May 1957, I have to advise you that this Department has for some time made free issues of a combined Diphtheria-Whooping Cough-Tetanus vaccine and that this has been brought to the notice of all Local Authorities in the Union by Circular No. 4 of 1957 dated 15 April 1957, a copy of which is attached.

You will appreciate that our approach towards immunization against tetanus cannot be quite the same as that towards communicable diseases. It was therefore considered that the position could best be met by making available this accepted combination of vaccines.

Parents are usually vague about the diseases against which their children have been immunized. You may therefore be prepared to encourage the use of this combined vaccine through the *Journal* of the Association as clinicians will have no alternative but to administer tetanus anti-serum until this combined prophylactic vaccine is in general use.'

The circular mentioned in the letter refers to the prophylactic preparations which the Department of Health issues free to local authorities for public immunization. These consist of the following diphtheria-prophylactic preparations: (a) Purified Toxin Adsorbed Aluminium Phosphate (PTAP), (b) Adsorbed Dissolved Floccules (ADF), (c) Dissolved Floccules (DF), (d) Combined Whooping Cough-Diphtheria Prophylactic (*H. pertussis* and PTAP), (e) Diphtheria-Whooping Cough-Tetanus Prophylactic (DWT), (f) Schick Test (immunity to Diphtheria); and also (g) Typhoid-Paratyphoid Endotoxoid (Prophylactic). For use in private practice these preparations can be bought through the trade; any practitioner, however, who wishes to obtain supplies of any of them for use on patients who are unable to pay for the material is advised to apply to the medical officer of health of the local authority.

1. Minutes of Fed. Council, no. 120 (1957): S. Afr. Med. J., 31, 492.

## SOUTH AFRICAN ORTHOPAEDIC ASSOCIATION

### CLINICAL MEETINGS AT JOHANNESBURG

At a clinical meeting held at the Johannesburg General Hospital on 26 April 1957, Mr. C. T. Moller presiding and 20 members and associate members being present, papers were read by Messrs. W. de Haas, D. Roux and L. van Blerck, of which summaries prepared by Mr. S. Sacks are set out below, and Mr. G. T. du Toit showed a case.

#### THE BLOOD-SUPPLY OF LONG BONES

Mr. W. de Haas

This paper was based on experiments performed by himself and Dr. McNab at the Banting Institute, Toronto, with a grant from the Canadian National Research Council. The object of the experiments was to determine why fractures of some bones unite more quickly than other bones, and they were based in a study of the blood supply in normal and fractured bones.

In a normal tibia the blood supply is derived from 3 sources, viz. (a) the nutrient artery, (b) the metaphyseal and epiphyseal arteries, and (c) the periosteal arteries.

Slides were shown depicting these vessels macroscopically and microscopically. There are very few vessels on the subcutaneous surface of the tibia. The nutrient artery enters the bone at the junction of the upper and middle thirds and passes very obliquely downwards and inwards to the medullary cavity where it anastomoses with the metaphyseal arteries to form the endosteal circulation. The periosteal arteries traverse transversely across the bone.

The venous drainage of bone was the main study attempted, because it had not previously been adequately described. Injection with contrast dyes revealed a rich sub-periosteal plexus of veins on the surface of the bone. Venae comites follow the periosteal and metaphyseal arteries. The nutrient vein is found to be extremely small compared with the nutrient artery. The cortex of the bone is filled with a multitude of tiny venous canals traversing the Haversian and Volkmann canals. The veins travel through the bone from above, downwards and outwards, indicating that the venous blood-flow is under the influence of gravity and not muscular action. The capillary plexus of veins in the diaphysis is completely different from that in the metaphysis—there is not such a multitude of capillaries present. This capillary plexus of veins drains into the medullary canal, the cortex, and a large venous sinusoid from the marrow cavity draining into the nutrient vein—as in the portal circulation.

When the nutrient artery was tied and the bone examined 4 weeks later, no gross changes of significance were found in the tibia. The endosteal circulation had re-established itself by anastomosis with the metaphyseal vessels. Histologically, however, there was some partial bone necrosis. The Haversian canals were larger and more numerous and the lacunae were empty. It was deduced, therefore, that tying the nutrient artery only causes a temporary ischaemia.

When the periosteum was stripped from the bone and some inert plastic material placed between it and the bone, it was found

6 weeks later that the marrow cavity had become filled with a granulation tissue reminiscent of Paget's disease. The cortex appeared to have been re-vascularized from the medullary cavity. When the medullary canal was curetted out and plugged with wax, it was found 6 weeks later that the vessels were growing into the dead cortex from the periosteum, forming a type of involucrum on the surface of the bone.

From these experiments it was deduced that bone has good power of regeneration provided there is either a good periosteal or an intact medullary blood supply. If the endosteum and cortex is permanently destroyed the bone will become necrotic.

In intramedullary nailing of fractures, the periosteum usually falls back into place and is the main source of re-vascularization of the fractured ends.

These experiments might throw some light on other pathological conditions of bones, e.g. Paget's disease.

In the discussion of the paper, Mr. de Haas stated that periosteal vessels do not arise from muscular arterioles, but from the major vessels of the limb, and actually send branches into the muscles where they are attached to bone. The role of the nutrient artery in fractures is not important because of the generous anastomosis with the metaphyseal vessels.

#### ONE ASPECT OF SCOLIOSIS

Mr. D. Roux

Slides were shown depicting the manner of correction of scoliosis deformity by the hinged plaster technique with turnbuckles and the use of a fracture table. Three patients were presented, illustrating the different stages in the plaster-cast correction process. Their X-rays before and after correction were shown, with the angles of deformity and correction clearly marked.

Mr. Roux presented the results of 22 cases of idiopathic scoliosis treated over 2½ years at the Hospital for special surgery in New York. The average degree of curvature of the spine in these cases before correction was 80°. This was reduced to an average deformity of 45°. Two years after spinal fusion had been done on these cases, the average degree of relapse was to a deformity of 65°. Although these figures appear to be disappointing, the cosmetic effect of the correction of the tilt of the spine on the pelvis, and the diminution of hip protrusion was very evident and satisfactory.

In the discussion, Mr. Roux was asked what percentage of cases develop severe backache in the remaining mobile vertebrae after 5 or 10 years. The answer was that no figures had yet been produced but the average incidence of pseudarthrosis of the graft was 30%. Not all cases, however, complain of pain.

No attempt is made to correct the razor-back deformity by rib resection because Cobb maintains that the vital capacity is not improved by rib resection. The lung does not seem to expand into the gap. However, after correction and fusion of the curve alone, there appears to be some improvement in pulmonary capacity—to a greater degree in the milder types of scoliosis,



and very little in the grosser curves. The average period for immobilization in plaster after spine fusion is 16 months.

#### REVIEW OF THE CHARNLEY CENTRAL DISLOCATION OPERATION ON THE HIP JOINT

*Mr. L. van Blerck*

Eleven cases were shown who had this operation performed in the Johannesburg Hospital Orthopaedic unit in the last 3 years. They represented one-third of the number of cases done in the unit. The patients and their X-rays were shown. Three showed solid bony fusion radiologically and had no pain; 8 had fibrous ankylosis. Of the 8 with fibrous ankylosis, 2 were painless, 2 had slight pain, and 4 had a good deal of pain. The patients with solid bony fusion could walk for miles, dance and swim, and were very satisfied with the operation.

Mr. van Blerck felt that the statement that 'it does not matter whether a bony or fibrous ankylosis is obtained', is not corroborated by the figures and cases he presented. He also concluded that it was not easy to produce a bony arthrodesis by Charnley's method even with screw or compression fixation.

#### A CASE OF RADIONECROSIS OF THE FEMUR

*Mr. G. T. du Toit*

In this case, shown by Mr. du Toit, the patient had been given a total dosage of 2,400 X-ray therapy to a large keloid scar on the back of her thigh which had resulted from burns. Eight years later she sustained a pathological fracture through an area of radionecrosis in the middle of her femur.

Despite 4 months immobilization in plaster, the bone showed not the slightest sign of union. An operation was then performed, the bone ends were resected down to what looked like healthy bone, double plates and bolts were applied and a 6-inch-long cortical graft was applied to the anterior surface of the femur. She has worn a caliper on the leg ever since and there is still no sign of union 19 months after the operation.

The question of further treatment was discussed. Some members favoured an intramedullary nail plus large cortical chip grafts. Others mentioned amputation, but the general consensus of opinion was that she was just as well off with her caliper as with a prosthesis.

#### CLINICAL MEETING AT THE CHAMBER OF MINES HOSPITAL

At a clinical meeting held at the Chamber of Mines Hospital, Cottesloe, Johannesburg, on 24 May 1957, Mr. C. T. Moller presiding and 31 members and visitors being present, contributions were presented by Messrs. W. J. Thomas, I. McGregor, I. Southgate and C. Freed. The following summary has been prepared by Mr. S. Sacks.

#### UNCOMMON FOOT AND ANKLE INJURIES

*Mr. W. J. Thomas*

Four cases were presented, as follows:

(a) A patient who sustained a forced inversion strain of the foot with a small wound on the lateral aspect, in which one stitch had been placed by the doctor at the scene of the accident. At operation 9 hours after the accident this stitch was removed and the talus nearly fell out of the wound. The external collateral ligament was completely ruptured and the origin of extensor digitorum brevis was found to be avulsed. The wound was flooded with penicillin and the external ligament repaired with nylon. The foot was immobilized in plaster for 8 weeks, and then an appropriate leg iron was prescribed, but the patient did not wear it. He is back at work without any disability.

(b) This patient had fallen from a height of 11 feet. He was 200 lb. in weight and was admitted with a markedly swollen ankle. The talus had fractured vertically through its body, and the posterior fragment was displaced posteriorly and medially, almost bursting through the skin. An open reduction was performed, but it was decided, because the posterior fragment had no attachments, to perform an immediate astragalectomy. This was done and the patient was now ambulant, with an inside iron and outside T-strap appliance.

(c) The third patient had fallen from a height of 10 feet; sus-

taining a complete subtalar dislocation, with the foot grossly inverted and the sole pointing medially. The dislocation was easily reduced under anaesthesia and relaxants. Plaster was applied for 6 weeks, and an iron worn for 4 weeks. The patient walked without any disability.

(d) This patient's foot was imprisoned by a fall of rock. There was gross swelling, with a deformity over the cuneiform-metatarsal joints. The dorsalis pedis was palpable and the circulation good. X-ray revealed downward dislocation of the 1st and 2nd cuneiforms on the tarsal navicular. The dislocation was reduced without difficulty, but an area of blanching of the skin developed immediately on the dorsum of the foot. An incision was therefore made in the skin on the dorsum of the foot and some dark blood clots were evacuated. The skin colour immediately improved. One week later a secondary suture of the skin wound was performed. He was off work for 2½ months and the only disability is slight pain under the 1st metatarsal head.

In the discussion Mr. Edelstein mentioned a case of fracture dislocation of the talus with posterior fragment displacement which was reduced and who eventually united with good function. Mr. Moller recalled three cases of such a nature in whom subsequent astragalectomy had become necessary because of avascular necrosis. He had seen a patient with a satisfactory foot on whom astragalectomy had been done 27 years previously.

#### AVASCULAR NECROSIS OF THE FEMORAL HEAD

*Mr. I. McGregor*

In this case, shown by Mr. McGregor, the patient was a miner who had been struck on the buttock by a fall of rock 15 months previously. Soon after the accident he was admitted to hospital because of acute pain in the hip. He was limping badly at that time, with some flexion of the hip joint. Skin traction was applied to the leg. Blood examination revealed a sedimentation rate of 55. There was some pyrexia and some tonsillar infection. Antibiotics were administered and the patient recovered completely after 2 weeks' rest.

He was not seen again until 15 months later, when he complained of pain in his right thigh and knee after stumbling over a small hedge. X-ray now showed a marked avascular necrosis of the head of the femur.

A discussion took place whether this necrosis was due to the injury to the buttock alone, or to sepsis in the hip joint as evidenced by pyrexia and raised sedimentation rate shortly after the injury.

Mr. Lunz mentioned a case who had shown avascular necrosis of the femoral head 5 years after frank pus had been evacuated from the hip joint.

Mr. Sacks recalled a case who had sustained a crack fracture of the greater trochanter due to a fall on the hip, and X-rays 1 year later revealed aseptic necrosis of the head of the femur.

Other members mentioned similar cases of necrosis following minor injuries to the hip region.

Mr. Edelstein felt that the avascular necrosis in Perthes' disease of the hip followed on some minor hip-joint infection.

Mr. G. T. du Toit felt that the disability in this case should be accepted as due to the injury sustained at work.

#### DISLOCATION OF THE KNEE JOINT

*Mr. I. Southgate*

Mr. Southgate reviewed several cases of this dislocation. He mentioned a particular mine accident where 10 patients had suffered injuries to the bone or ligaments of their knee joints when a cage had suddenly dropped 6 feet during its descent. One of these patients had suffered a dislocation of the knee. A case was shown with alleged gross laxity of the external collateral ligament of the knee and he requested advice on treatment of this condition.

It was suggested that the ligament should be repaired by using a portion of the biceps femoris to reinforce it.

Mr. Sacks asked the meeting how soon a peroneal nerve lesion associated with knee dislocation should be explored.

Mr. G. T. du Toit felt that complete rupture of the medial collateral ligament associated with knee dislocation is often overlooked. If a rolled-up portion of tissue is palpable on the medial side, it should be explored and the ligament repaired at once. Mr. Thomas presumed that the cruciate ligaments were always torn in knee-joint dislocations, but their laxity was masked

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by the stability engendered by the fibrosis that occurs in the posterior capsule of the joint after healing.

#### INJURY TO THE POPLITEAL VESSELS WITH DISLOCATION OF THE KNEE

Mr. C. Freed

Mr. Freed described a case which required amputation 9 days after the accident. He felt that in injuries to bones and joints the concomitant injury to blood vessels is not always recognized early enough. Immediate arteriogram and treatment will often save limbs.

In discussion, the difficulty of clinically assessing the amount of vascular damage was emphasized. If there is any doubt whether the circulatory obstruction is due to spasm or to vessel rupture

or thrombosis, an arteriogram should immediately be done. This, however, will not tell us whether the blood vessels distal to the obstruction are blocked by thrombosis or merely in spasm, and a retrograde injection of radio-opaque material should also be performed via the dorsalis pedis or posterior tibial arteries. It can then be decided whether an arterial grafting or end-to-end anastomosis is necessary. The saphenous vein is useful graft material.

In high tibial fractures, it may be necessary to decompress the swollen limb by an incision into the anterior compartment. Lumbar block and anti-coagulants and spasmolytic drugs are useful adjuvants to such operative procedures.

The results of arterial grafts in the limbs are not as successful as aortic grafts.

## TRANSVAAL SOCIETY OF PATHOLOGISTS

### SUMMARIES OF SCIENTIFIC PAPERS \*

#### COLD HAEMAGGLUTININS IN PRIMARY ATYPICAL PNEUMONIA

Dr. B. Grobbelaar, S.A.I.M.R.

An analysis of cold haemagglutinin investigations carried out at the Blood-Group Research Laboratories, S.A.I.M.R. shows that the incidence of cold haemagglutinins in primary atypical pneumonia is very low in this country, and does not differ significantly from the incidence in other types of respiratory diseases.

#### (a) AMYLOID TUMOUR OF THE BRAIN

#### (b) THE PATHOLOGY OF MENIÈRE'S DISEASE

Dr. N. Proctor, S.A.I.M.R.

(a) Damage to the underlying brain tissue is rare but an important complication of radiation therapy to lesions of the scalp and face as well as to the intracranial neoplasms. A case is described in which localized amyloid material had accumulated in the degenerated ground substance of the temporo-parietal region of the brain and associated blood vessels, as a result of radiation of a basal cell carcinoma involving the overlying skin. The adjacent cerebral tissue was markedly oedematous and astrocytic proliferation and swelling was a prominent feature of the lesion. Clinically the picture was that of a progressive temporo-parietal space-occupying mass.

(b) Histological sections were demonstrated to illustrate Lempert's theory to account for the clinical picture of Menière's disease. Portions of the membranous labyrinth removed from a patient suffering from this condition showed vesicular lesions associated with vacuolar degeneration of the lining epithelial cells. Lempert feels that rupture of these vesicles is responsible for the acute episodes characteristic of the disease and that degenerative changes in the cochlea follow the repeated irritation by some toxic material liberated from these vesicles.

#### ESTERASES VAN DIE ROTBREIN, MET SPESIALE VERWYSING NA DIE VAN DIE HYPOTHALAMIESE KERNE

Dr. W. J. Pepler, Instituut vir Patologie, Pretoria

Deur gebruik te maak van verskillende substrate (-naftol asetaat, naftol A-S asetaat, O-asetiel-5-bromindoksiel, asietielcholeliedjodied), asook 'n reeks van inhibiteurs en aktiveerders, was dit moontlik om 6 verskillende tipes esterases in die rotbrein vas te stel. Uit die eksperimentele bevindings het dit geblyk dat die een ensiem in die hipotalamiese kerne en in die perisiete moontlik 'n peptidase was.

Die asetielcholinesterase en die peptidase in die hipotalamiese kerne, veral in die Nucleus supraopticus en Nucleus paraventricularis, is ondersoek onder verskeie toestande van stimulasie van sowel die anterior as die posterior hipofese. Hieruit het dit geblyk dat onder al die eksperimentele toestande die neurone

van hierdie kerne hipertrofeer het en dat die asetielcholinesterase vermeerder en die peptidase verminder het. Die belang van hierdie bevindings is bespreek.

#### LIVER DISEASE AND ITS RELATIONSHIP TO GYNAECOMASTIA AND UTERINE MYOMATA

Dr. I. Simson and Dr. J. Higginson, S.A.I.M.R.

In a post-mortem study carried out on 500 Bantu subjects, the frequency of gynaecomastia in males and of uterine myomata in females was noted. It was observed that the frequency of each lesion was considerably higher than that found in a comparable series from the United States. In view of the widespread belief that the presence of gynaecomastia in Africa is dependent on liver disease, the severity and frequency of gynaecomastia were correlated with various types of liver lesions occurring in the Bantu. No correlation was found.

A similar lack of correlation was also found for the frequency of myomata and liver disease in females.

#### ADDISONIAN PERNICIOUS ANAEMIA IN THE S.A. BANTU

Drs. J. Metz, R. Cassel and S. M. Lewis, S.A.I.M.R.

During the study on the absorption of radio-active vitamin B<sub>12</sub> (60Co-B<sub>12</sub>) in megaloblastic anaemias in the Bantu, the diagnosis of 6 cases of Addisonian pernicious anaemia has been established by the demonstration of defective absorption of vitamin B<sub>12</sub>, corrected by concomitant administration of an intrinsic factor preparation. A further case of megaloblastic anaemia died shortly after admission. Autopsy showed marked gastric atrophy, and changes in the spinal cord consistent with subacute combined degeneration.

#### TWO YEARS EXPERIENCE WITH THE TREPONEMA PALLIDUM IMMOBILIZATION TEST

Dr. V. Bokkenheuser, S.A.I.M.R.

The paper contains a short review of the technique with particular reference to some of the technical difficulties. A correlation of results obtained with T.P. I test and usual standard tests for syphilis, carried out on 200 sera from a Bantu population, are presented. It appears that the Ide test is less sensitive and less specific than the V.D.R.L. test. Of these two therefore, it seems that the V.D.R.L. is preferable as a screen test. Its sensitivity and specificity is equalled by Kolmer. The paper closes with a short discussion on the reliability of standard tests for syphilis in diagnosing the disease in Bantu and Europeans.

#### STUDIES ON THE ROLE OF LIPID INHIBITORS ON IN VITRO FIBRINOLYSIS

Dr. H. B. W. Greig, S.A.I.M.R.

Following the demonstration<sup>1</sup> of inhibition of spontaneous fibrinolysis in lipaemic plasmas, studies have been prosecuted to determine the component(s) responsible.

The results of the following studies will be reported and the possible significance of the findings discussed in relation to the etiology of atherosclerosis and thrombosis:

\* Read at the meeting of the Transvaal Society of Pathologists, Pretoria, 27 April 1957.

- (a) Effect of feeding different types of fat.
- (b) Effect of lipid-solvent extraction of plasma.
- (c) Effect of parenteral administration of heparin.

1. Greig, H. B. W. (1956); Lancet, 2, 16.

#### CANCER IN THE SOUTH AFRICAN BANTU

Dr. J. Higginson and Dr. A. G. Oettle, S.A.I.M.R.

A survey of the results of a 3-year cancer survey on the South African Bantu is presented. It is shown, that while the over-all

incidence of cancer is less than in the USA, neoplasms of the oesophagus and liver in males are definitely commoner than in America. In females, the frequency of carcinoma of the cervix uteri is comparable to that observed in the American Negro but is commoner than in the American White. Carcinoma of the corpus uteri is very rare. In males carcinoma of the lung is not infrequent and is possibly related to smoking. The aetiological significance of these findings is reviewed.

### PASSING EVENTS : IN DIE VERBYGAAN

**South African Paediatric Association.** The next meeting of the Cape Town Sub-group of this Association will take place on Tuesday 2 July 1957 in the E Floor Lecture Theatre, Groote Schuur Hospital, Cape Town, at 8.15 p.m. Dr. A. Berrett, recently returned from the Children's Medical Centre, Boston, USA, will speak on Mediastinal Swellings in Infancy and Childhood: their Clinical Significance and Differential Diagnosis. The talk will be illustrated by slides. Members of the Obstetric, Physicians and Radiologists' Groups are cordially invited to attend.

Dr. S. Schwartz, F.R.C.S., Orthopaedic Surgeon, has moved his consulting rooms from Dumbarton House to the Medical Centre, Heerengracht, Cape Town. The telephone numbers 35092 and 46387 (residential) remain unchanged.

Dr. E. Miller, M.B., B.Ch. (Rand), D.O.M.S., R.C.P. & S. (Eng.), formerly of Johannesburg, is now practising as an Ophthalmic Surgeon at 205 Globe Building, 115 Main Street, Port Elizabeth. Telephones: rooms 22988, residence 28860. These numbers are not in the current telephone directory.

Mr. Cyril Toker, F.R.C.S. (Edin.), F.R.C.S. (Eng.), of Johannesburg, will shortly be returning to the Union after a period of postgraduate study in the United Kingdom.

**University of the Witwatersrand, Johannesburg. Medical Graduates Association. Proposed Postgraduate Refresher Course in Gynaecology and Obstetrics.** It is proposed to organize a postgraduate refresher course in Gynaecology and Obstetrics to take place over the last week-end in August. Would those interested in participating in this course please communicate with the Secretary, Medical Graduates Association, Medical School, Johannesburg, telephone 44-7040 (9 a.m.-12.30) and state whether they would like the Friday included in the week-end course. The fee for the course will be £4 4s. 0d.

**Mediese Vereniging van Suid-Afrika, Afdeling Noordweste.** Die verkiesingsvergadering sal te Vredendal op Saterdag 13 Julie 1957 gehou word. Die konferensie sal weer in die vorm van 'n kliniese byeenkoms in die namiddag, en die besigheidsdeel in die aand, wees. Dit is ook beplan om 'n funksie in die namiddag vir die vrouens te reël.

**Ross Centenary Luncheon.** On 13 June 1957 the Ross Institute of Tropical Hygiene held a Centenary Luncheon at the London School of Hygiene and Tropical Medicine (with which the Ross Institute was amalgamated in 1934), to celebrate the birth of Ronald Ross, who discovered that malaria is transmitted by the bites of anophelous mosquitoes. The toast of 'The memory of Sir Ronald Ross' was moved by Dr. M. G. Candau, Director-General of the World Health Organization.

Ronald Ross was born in India on 13 May 1857, and it was in India that, 40 years later, he made his discovery. That discovery opened the way for successful warfare against a disease which was the greatest scourge of the tropics. It was hardly less important because it also turned men's minds towards the investigation of insects as the carriers of other diseases, and within a few years the germs of yellow fever, relapsing fever, plague, typhoid and sleeping sickness were all shown to be carried by insects.

**Union of South Africa. Department of Health.** Notification of formidable epidemic diseases and poliomyelitis in the Union during the period 7 June-13 June 1957.

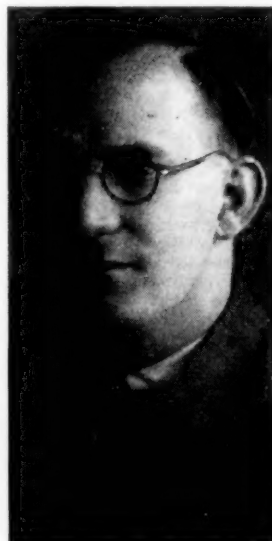
	Poliomyelitis				
	Eur.	Nat.	Col.	Asiat.	Total
Transvaal ..	10	4	—	—	14
Cape Province ..	7	7	11	—	25
Orange Free State ..	—	—	—	—	—
Natal ..	1	5	—	—	6
Totals ..	18	16	11	—	45

Plague, Smallpox, Typhus Fever: Nil.

### IN MEMORIAM

DAVID JOHANNES THERON, M.B., Ch.B. (CAPE TOWN)

The death occurred suddenly, at the age of 51 years, of Dr. David Johannes Theron, on Sunday 26 May, at Welkom, O.F.S. At the time of his death Dr. Theron was Superintendent of the Provincial Hospital at Welkom, a position which he had held since the beginning of the year. He was cremated in Pretoria on 28 May in the presence of a large number of relatives and friends who attended the service in the Chapel.



Dr. Theron

Dr. Theron was educated in Frankfort, O.F.S., where his father was for many years principal of the Frankfort Public School. After his matriculation he proceeded to the University of Cape Town, and qualified M.B., Ch.B. in 1929. At 'Varsity Dawie was a brilliant and popular student, and excelled both in the lecture theatre and on the sports field. He obtained several first classes in his medical examinations, was an excellent short-distance runner and swimmer, and also captained the second team at Rugby.

After qualifying he accepted a post as house surgeon in the old Pretoria General Hospital, and a year later started a practice of his own in Pretoria. Through efficiency and sheer hard work

he soon worked up a very big practice, and was especially popular with the poorer section of the community, whom he often treated at all hours of the day or night, without any idea of reward.

When war broke out Dawie was one of the first doctors to join the S.A. Medical Corps. He was very soon promoted to the rank of Major, and spent some time in Nairobi and Mogadishu

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being eventually transferred to Durban, where he was registrar at Springfield Military Hospital.

At the end of hostilities Dr. Theron returned to Pretoria, where he carried on with his practice. He was also appointed Chairman of the Asylums Board, and a member of the Demobilization Committee.

In recent years his health began to fail, and owing to an eye complaint (bilateral cataracts) he was forced to give up his practice for several months. At one stage he was almost blind, but in

spite of this handicap he carried on cheerfully, and with great fortitude. However, owing to continued ill-health he was eventually forced to give up private practice, and later joined the O.F.S. Provincial Medical Service. His death came suddenly as the result of a gastric haemorrhage.

Those who knew him well will miss his kindness, good humour, and loyalty towards his friends. To his son and daughter, their mother, and his two sisters, sincere sympathy is extended in their sad bereavement.

## ASIATIESE GRIEP: VERKLARING GEMAAK IN PARLEMENT DEUR MINISTER VAN GESONDHEID

Die Minister van Gesondheid het die volgende verklaring op 20 Junie 1957 in die Laerhuis gemaak:

My Departement het op Maandag, 17 deser, 'n vergadering van die Adviserende Komitee insake Virologie in Johannesburg belê met die doel om die gebruik van die entstof, wat tans in verband met die beheer van Asiatiese griep vervaardig word, te bespreek. Die mening is gehuldig dat, in weerwil van enige voorsorgsmaatreëls wat getref kan word, die inbrenging van die siekte in die Unie nogtans onvermydelik is. Gelukkig was die siekte tot nog toe nie van 'n ernstige graad nie.

Na deeglike ondersoek het dit ook geblyk dat daar maar 'n beperkte voorraad van die entstof berei kan word sonder om 'n ontwrigting van die vervaardiging van ander noodsaaklike entstowwe soos, byvoorbeeld, dié teen polio, te veroorsaak. Die eerste voorrade van die entstof teen griep sal nie voor die middel van Julie vanjaar beskikbaar gestel kan word nie maar daarna sal uitreikings van voorrade hopelik weekliks kan geskied.

Die Adviserende Komitee het dit beklemtoon dat inenting teen die siekte nie as 'n beheermaatreef aangewend kan word nie. Bygevolg stel die Komitee dus voor dat namate die entstof beskikbaar raak, voorrang in verband met die uitreiking daarvan aan sekere prioriteitsgroepe van geneesher en verpleegsters verleen

word. Intussen word navorsing gedoen in verband met die moontlikheid om op groter skaal en teen 'n sneller tempo 'n entstof met 'n verswakte lewende virus te vervaardig. Hierdie moontlikheid sal aanstaande maand deur dr. R. Turner, Senior Staatspatoloog en Adviseur insake Patalogiese Dienste van die Unie-Departement van Gesondheid en dr. J. H. S. Gear, Direkteur van die laboratorium van die Polionavorsingstigting, met buitelandse deskundiges bespreek word wanneer hulle 'n internasionale konferensie in Genève bywoon.

Voorts belê my Departement 'n vergadering op Dinsdag 25 Junie, in Pretoria om die voorsorgsmaatreëls, wat teen Asiatiese griep getref moet word, te bespreek. Verteenwoordigers van die Mediese Gesondheidsbeampes van plaaslike owerhede, die Mediese Vereniging van Suid-Afrika, die Provinsiale hospitaaldienste en Skool-mediese dienste van die Provinsiale Administrasies, die Administrasie van Suidwes-Afrika, die Departement van Verdediging, die Suid-Afrikaanse Noodhulppliga, die Suid-Afrikaanse Rooikruisvereniging, die St. Johns Ambulansvereniging, asook lede van die Adviserende Komitee insake Virologie, is daarheen uitgenooi. Na afloop van die vergadering sal 'n omsendbrief, gebaseer op die aanbevelings en besluite wat op die vergadering gedoen en geneem is, deur my Departement aan alle plaaslike owerhede en betrokke liggame gestuur word.

## DIE KAAPSTAD-PROTESOPTOG : THE CAPE TOWN PROTEST MARCH

Die Raad van die Tak Wes-Kaapland van die Mediese Vereniging van Suid-Afrika het die volgende verklaring, gedateer 24 Junie 1957, uitgereik:

Op 'n vergadering van die Raad van die Wes-Kaaplandse Tak, op 21 Junie 1957 gehou, is die volgende voorstel sonder teenstem aangeneem:

„Die Raad van die Tak Wes-Kaapland, in sy beskerming van die waardigheid en eer van sy lede, keur die eis van die Provinsiale Administrateur aan die Superintendent van die Groote Schuur-Hospitaal vir die name van persone wat deelgeneem het aan die optog te Kaapstad op 7 Junie 1957, af.”

A. Swanepoel  
Ere-Assistentsekretaris  
Tak Wes-Kaapland

The Council of the Cape Western Branch of the Medical Association of South Africa has issued the following statement under date 24 June 1957:

At a meeting of the Council of the Cape Western Branch held on 21 June 1957 the following resolution was passed *nem con.*

„The Council of the Cape Western Branch, in guarding the dignity and honour of its members, deprecates the demand by the Provincial Administrator to the Superintendent of Groote Schuur Hospital for names of persons who took part in the procession in Cape Town on 7 June 1957.”

A. Swanepoel  
Hon. Asst. Secretary  
Cape Western Branch

## NUWE PREPARATE EN TOESTELLE : NEW PREPARATIONS AND APPLIANCES

### Romilar Expectorant Syrup

Roche Products (Pty.) Ltd., announce the introduction of 'Romilar' Expectorant Syrup containing no narcotic, and supply the following information:

5 c.c. (1 teaspoonful) of 'Romilar' Expectorant Syrup contains:  
15 mg. dextromethorphan hydrobromide  
50 mg. panthenol  
90 mg. ammonium chloride.

Dextromethorphan hydrobromide is a well-tolerated powerful cough-suppressant with an action similar to that of codeine but with the important advantage of not being a narcotic. Ammonium Chloride promotes the liquefaction of mucosal secretions and facilitates expectoration. Panthenol—a derivative of the vitamin pantothenic acid—is included in 'Romilar' Expectorant for its healing action on inflamed irritable respiratory passages.

**Indications:** Relief of cough in colds, bronchitis and other respiratory tract disorders.

### Usual Doses

Adults 1-2 teaspoonfuls 1-4 times daily.  
Children over 4 years  $\frac{1}{2}$ -1 teaspoonful 1-4 times daily.  
Children 1-4 years  $\frac{1}{4}$ - $\frac{1}{2}$  teaspoonful 1-4 times daily.

'Romilar' Expectorant Syrup may be taken neat or diluted with water, milk, tea, fruit juices, etc., preferably after meals.

'Romilar' Expectorant Syrup is issued in bottles of 100 c.c. and 500 c.c. Available through usual channels.

Made in Switzerland for Roche Products (Pty.) Ltd., 105 Quartz Street, Johannesburg.

*Salazopyrin*

Protea Pharmaceuticals Ltd. announce that this preparation, manufactured by Pharmacia Uppsala, Sweden, is now available in South Africa. The manufacturers supply the following information:

Salazopyrin contains 4-(pyridyl/2/amidosulphonyl)-3' carboxy-4'-oxyazobenzene (salicylazosulphapyridine) and is thus an acid azo-compound of salicylic acid and sulphapyridine. During the last 5 years some very positive results have been reported from leading American gastro-enterologists in the treatment of ulcerative colitis and the drug has been accepted by the American Medical Association and is quoted in 'New and Nonofficial Remedies'.

**Side-effects.** Serious side-effects from Salazopyrin are very rare but occasionally a high toxic fever with rash may appear within 7-12 days. In these cases the dose should immediately be reduced and, if the condition persists, discontinued for some days. Blood and urine should be checked once a week during the first 3 weeks of the treatment and afterwards every 2nd week. Serious anaemia has not been seen but a tendency towards leucopenia has been observed. If signs of leucopenia appear, the drug should be discontinued immediately.

**Administration and Dosage.** The normal dose of Salazopyrin for adults is 2 tablets (1 g.) 4-6 times daily. The dosage, however, may be adjusted to individual requirements. In cases of diarrhoea it is important to give a higher dose (10-12 tablets per day). The doses are to be given day and night until the active symptoms are improved and then during the waking hours, when the interval during the night should not exceed 8 hours. The preparation

should be taken in connection with meals. It is recommended that the results of treatment should be checked through the sigmoidoscope. In children over 7 years the normal dose is 1-2 tablets 3-6 times daily; for children of 5-7 years  $\frac{1}{2}$ -1 tablet 3-6 times daily.

\* \* \*

*Penicillin V*

Eli Lilly and Company Limited have supplied the following statement:

Eli Lilly and Company Limited. Following the introduction of 'Pulvules' Penicillin-V Lilly 125 mg., this acid-resistant oral penicillin is now also available as 'Pulvules' Penicillin-V Paediatric Lilly, each containing 60 mg. This strength is very suitable for administering Penicillin-V to children, the small size of the capsule presenting no difficulty in swallowing. Very young children and infants may be given Penicillin-V in the form of Suspension Penicillin-V Lilly Paediatric. 'Pulvules' Penicillin-V Paediatric Lilly are available in bottles of 20 filled capsules.

Also available is the new introduction, Tablets Penicillin-V-Sulpha Lilly, a combination of Penicillin-V with Sulphonamides. Each tablet contains Penicillin-V Lilly 125 mg. (200,000 units) with a total of 0.5 g. of Sulphonamides (equal quantities each of Sulphadiazine, Sulphamerazine and Sulphadimidine). Tablets Penicillin-V-Sulpha are indicated particularly in mixed infections such as bronchitis and respiratory diseases, and where the causative organisms are only moderately susceptible to either group of drug.

Tablets Penicillin-V-Sulpha Lilly are available in bottles of 20.

## CORRESPONDENCE : BRIEWERUBRIEK

## GARGLES

*To the Editor:* I recently saw a very effective demonstration of the utter uselessness of throat gargles. Using a common gargle to which he had added a barium compound, a radiographer took successive X-ray pictures and very clearly demonstrated that the gargle never came near the throat surfaces for which it was intended.

For me, therefore, gargles are definitely out. Good riddance!

Gargoyle

17 June 1957

## BLOOD VESSEL BANKS

*To the Editor:* I have read the article by Mr. Paul Marchand<sup>1</sup> on the management of a blood vessel bank, in the *Journal* of 1 June 1957, with great interest and appreciation. In view of the increasing scope and importance of arterial surgery, I feel that his article has come at a suitable time. We in Pretoria also have an arterial bank, which had its first blood vessels available for human use in September 1955. In view of the fact that we have since this time also gained a certain amount of experience in connection with our arterial bank, I should like to offer the following comment on certain points in his article.

First of all I should like to agree heartily with him that in spite of very extensive research in connection with plastic prostheses and in spite of the fact that these prostheses are very useful in certain situations, arterial homografts remain the most generally suitable for arterial surgery at the moment. It is quite possible that in the future homografts will be superseded by plastic prostheses, but at the moment I would agree with him that every effort should be made to have suitable arterial homografts available.

With regard to the donor, we prefer, and have thus far been able to use, only subjects under the age of 30 years. Admittedly the actual age is of less importance than the macroscopic and microscopic appearances of the vessel. Hence we would be prepared to use subjects over 30 years of age, provided their vessels proved suitable.

With regard to sterilization of arterial homografts, we originally took our grafts from the body with full sterile precautions. For about the past 9 months, however, we have used the method described by Szilagyi, Logripo and coworkers, in which beta-propiolactone is used as the sterilizing agent. We decided on this method of sterilization after reading the reports by these authors, and after writing to Dr. Szilagyi, who reported that, after using

the method for more than 2 years, he was completely satisfied with it and had used more than 150 grafts sterilized by this method. Our own experience has confirmed that the method gives very adequate sterilization, and we have noted no macroscopic change in the vessels after such sterilization. Dr. Pepler, of the Institute of Pathology, Pretoria, has examined specimens from 4 batches of arteries sterilized in this way, without being able to demonstrate histological changes with the ordinary haematoxylin-eosin staining technique. Specimens stained by the method for demonstrating elastic tissue have also shown no gross departure from the histological picture which is normal in this particular age-group. We are therefore continuing to use this method because it has been quite satisfactory in our hands. We have no experience of the method of using antibiotics as suggested by Mr. Marchand, but have always felt just a bit uncertain about the reliability of antibiotics in destroying certain types of organisms. In addition, their action on viruses and spores is less certain than that of beta-propiolactone, which according to the work of Szilagyi *et al.* completely destroys aerobic and anaerobic organisms, spores, fungi and viruses.

With regard to the preservation of arterial homografts, we prefer to use the method described by Gross, Bill and Peirce in 1939 for 2 or 3 weeks. If the grafts are not used during this time, they are preserved by the freeze-drying method. Our method of freeze-drying is practically the same as that of Rob and Eastcott. We have for a few months been experimenting with a slight variation in the application of their technique by which we hope to eliminate the admittedly slight danger of contamination of the graft during the freeze-drying process and also to simplify the process in certain respects. It is probable that within a few weeks we shall switch over to this slightly different technique.

In spite of the fact that we prefer homografts to plastic prostheses, we keep the various types of plastic material including Edwards-Tapp crimped Nylon grafts, Orlon, Sturdinyl and Prosthex or Ivalon available for use should the necessity arise. Grafts supplied by our bank have been used for the various types of arterial surgery, in which grafts may be necessary, such as replacements after excision of aneurysms or obliterated segments, by-pass grafts, and replacement following trauma.

J. K. Bremer

409 van Riebeck Buildings

Schoeman Street

Pretoria

17 June 1957

1. Marchand, P. (1957): S. Afr. Med. J., 31, 530

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